COLUMBIA LIBRARIES OFFSITE
HEALTH SCIENCES RESTRICTED
HR00554952

Serial
D
v.21
1907
copy 1

Columbia University
in the City of New York
School of Dental and Oral Surgery

Reference Library

THE
DENTAL REVIEW

DEVOTED TO THE ADVANCEMENT OF
DENTAL SCIENCE

C. N. JOHNSON, M.A., L.D.S., D.D.S.
EDITOR

VOL. XXI.

CHICAGO:
PUBLISHED BY H. D. JUSTI & SON
55 STATE STREET
1907

Digitized by the Internet Archive
in 2014

https://archive.org/details/dentalreviewdevo2119unse

GENERAL INDEX.

A Case of Multiple Neuritis of Dental origin, 402
A Combination Gold and Pocelain Inlay, 125
A Common Mistake in the Practice of Orthodontia, 1176
A Comparative Review of the Last Twenty-five Years of Dentistry, as Gathered from a Study of the Proceedings of This Society, 1185
A Duty to the Profession, 110
A Little Girl, 1275
A Manual of Normal Histology and Organography, 372
A Manual of Pathology, 372
Absorption of Deciduous Roots, 967
Adjustment of the Rubber Dam, 123
Adoption of Fads, 251
Advancement of Dentistry, 382
Alphozone in Dental Therapeutics, 609
Amendment to Section 401, Penal Code State of New York, 972
American Dental Society of Europe, 62, 207, 350, 1025, 1152, 1255.
American Text-book of Prosthetic Dentistry, 484
An Endowment Needed, 874
Anatomical Nomenclature, 485
Anchoring Bridges—A Method of—by Swaged Inlaid Abutments, 48
Annual Address of the Illinois State Dental Society, 637
Another Vacation, 111
Antral Empyema, 877
Applying Silver Nitrate, 878
Articulating Paper, 1283
Artificial Dentures, 698
Atlas and Text-book of Dentistry, 116
Atlas und Lehrbuch der Modernen Zahnartzlichen Metalltechnik, 603
Attaching Facings to Caps with Porelain, 252
Attention to Detail in Taking Impressions of the Mouth, 398

Be Careful with Your Cotton for Treatment, 1064
Be Honest with Your Patient, 877
Bicuspids—The Conservation of the, 297
Billmeyer, U. D., 125
Birthday, Dr. Honsinger's, 1067
Black G. V. Club, 563
Blows, The Nature of and the Relation of Size of Plugger Points to Force as Used in Filling Teeth, 499
Boil it Down, 1053
Bryan, Dr. L. C., Honored, 1288
Buds—The Miracle of the, 483
Building Up Gold Inlays, 606
Burnishing Gold Plate to a Tooth, 784

Carbolic Acid, 250
Care of the Eyes, 123
Cast Gold Bridges—Dr. Ollendorf's System of, 310
Cast Inlay—The, 1115
Cause of Empyema, 966
Cavity Lining—The Advantages of Cement as a, 1179
Cement Lining for Cavities, 1065
Changes Incident to Correcting Distal Occlusions of the Lower Arch, 1103
Chicago-Odontographic Society, 71, 194, 322, 428, 579, 644, 1150, 1245
Children's Teeth, The Treatment of, 539
Chittenden, C. C., 255
Cicatricial Tissue Due to Lancing, 250
Cleaning Out Root Canals, 969
Cleaning Root Canals, 381
Cleft Palate and Harelip—The Surgical Correction of, 1071
Clinic—The, 316
Cocaine—A Good Solvent for, 1283
College Commencements, 794, 882, 974
Comparison of Gold and Amalgam, 606
Condensation of Gold, 698
Conservative Dentistry—A Plea for More, 980
Contact Points, 249
Contact Points—Why I Make, 43
Cook, Dr. Geo. W., Married, 1288
Correcting Occlusion After Making Contact Points, 381
Courtesy in Correspondence, 1163
Crowns, 490

Death of Hon. S. W. McInnis, D. S. S., L. D. S., M. P. P., 1273
Decay at the Borders of Cavities, 1064
Dental Club, On the Advantages of a Good, 515
Dental Paradoxes, 1007
Dental Problem—The Vital Side of the, 550
Dental Research Work, 1092
Dentist—The—of Tomorrow, 819
Dentistry a Specialty of Medicine, 718
Desensitizing Dentine, 382
Determining What Is Best for the Patient, 785
Diagnosing Children's Teeth, 1174
Discrimination in the Selection of Filling Materials, 623
Do Not Varnish Inlays After Setting, 249

Editorial, 110, 244, 369, 481, 602, 695, 779, 875, 961, 1053, 1163, 1272
Editor's Desk, 111, 245, 371, 483, 963, 1054, 1164, 1275
Ethics, 991
Ethics or Honesty in the Profession, 760
Examinations, 877
Extracting Deciduous Teeth, 490
Extracting Teeth for Regulating, 969
Extraction in Orthodontia, 250
Extraction of Pulps After Local Anesthesia, 121
Extraction of Teeth, 1191

Filling Cavities in Children's Teeth, 607
Fillings in Bicuspids, 606
Finishing Amalgam and Gold Fillings, 249
Finishing Fillings, 1063
Fistula or Sinus, 966

Fitting Gold to the Walls and Margins of Cavities, 699
Fracture of Inferior Maxilla—Case of—with Treatment, 184

General Therapeutics—A Consideration of—as Applied to Dentistry, 797
Gill, Frank C., 388
Gold and Amalgam in Combination, 1174
Gold Crown—A Pure, 1284
Gold Filling, The Problem of Condensation and Specific Gravity of, 523
Gold Fillings vs. Inlays, 883
Gold Inlays, 257, 265
Gold Inlays—Report of Dr. Taggart's New Process of Making, 279
Gold Inlay Work—A Revolution in the Technique of, 244
Gutta-Percha for Filling Teeth, 784
Gutta-Percha for Root Filling and Setting Crowns and Bridges, 1176

Have Confidence in Yourself, 967
Hemorrhage—A Case of, 759
Hemorrhagic Diathesis, 1013
Holbrook, Arthur, 1068
Hollow Gold Inlay, 493
Hollow Inlays, 123
Hygienic Conditions as an Aid to Permanency in Dental Operations, 492

If Not—Why Not? 546
Illinois State Dental Association, 684, 761, 832, 920, 1031, 1122, 1223
Impression for Gold Inlay, 492
Inlays for Anchoring Bridges, 251
Inlays—The Sequel of, 892
Inserting and Filling Gold Foil Fillings, 1175
Interstate License Exchange, 721
Investment Plaster, 787
Iodoform—Substitute for, 1284
Irregularities in the Deciduous Teeth, 381

Just Another One, 963, 1054, 1164

Kinder, W. J., 611

Laboratory Work, 879
Lancing the Gums, 123
Lecture Notes on Chemistry for Dental Students, 116
Legislation for Dentists, 700
Letter from J. W. Byers, 247
Letter from F. S. Casper, 1058
Letter from J. W. Cormany, 1277
Letter from Harry C. Kahlo, 1172
Letter from New York, 117, 373, 485, 603, 696, 780, 1170, 1278
Letter from E. J. Perry, 1060
Letter from G. C. Poundstone, 1062
Letter from C. B. Rohland, 1169
License Exchange, 877
Limitations of Dental Education, 705
Lower Partial Plates with Wire Connections, 784

Mallet—The Horn, 1284
Mallets, 1065
Malocclusions of Class II, 1
Manipulating Amalgam for Fillings, 701
Manipulating Moldable Porcelain, 491
Masticating Surface of an Inlay, 1284
Materia Medica, 967
Memoranda, 126, 253, 384, 493, 610, 701, 788, 880, 970, 1066, 1177, 1287
Method of Removing Gold Which Flows Through Inlay Matrices, 1063
Method of Root Restoration, 636
Method of Setting an Inlay, 122
Method of Taking Plaster Impressions in Partial Cases, 609
Methods in Prosthesis Which Have Developed from the Gold Inlay, 615
Methods and Principles of Packing Gold, 896
Miller, W. D., 974, 1052
Minnesota State Dental Association, 105, 225, 364
Misconceptions Concerning Porcelain, 757
Mistakes I Have Made in Porcelain, 185
Mixing Plaster of Paris, 607
Mixing Porcelain, 879
Modern Treatment of Empyema of the Antrum of Highmore, 729
Moral Effect of Difficult Operations, 787
My Creed, 371
My Tree, 245

Narcotile, 192, 491
1908, 1272.
National Dental Association, The, 780
Non-corrosive Sterilizer for Dental Instruments, 252
Notes of a Case of Trismus and of a Case of Abscess in the Palate, 305

Observations on the Retention of Pulpless Teeth in the Jaws, with Indications for Their Removal, 291
Odontological Society of Chicago, 336, 460, 659, 867, 942, 1259
One Cause of Dental Caries, 698
On the Packing of Gold in the Average Cavity, 904
Open Face Crowns, 783
Operating on the Antrum, 968
Ottolengui, Dr., Twice Honored, 788

Partial Crowns, 784
Partial Dentures, 1195
Patents, 127, 254, 386, 496, 612, 702, 789, 881, 971, 1067, 1178, 1288
Pathology, 967
Pin Metal for Crowns and Bridges, 124
Plaster Impressions, 700
Points of Difference, 156
Porcelain Crown, The Development of the, 187
Porcelain Furnaces, 383
Practical Hints, 121, 249, 380, 490, 606, 698, 783, 876, 966, 1063, 1283
Preparation of Amalgam for a Filling, 607
Preparation of Impression Trays for Plaster, 786
Preparing Sensitive Cavities, 121
Prescribing Drugs, 878
President's Address, 54, 424, 631, 637, 911 1198
Preserve the Root, 786
Prize, 790
Prophylaxis, 491
Pulp Decomposition—A Brief Review of the Chemistry of—with a Rational Treatment for This Condition and Its Sequelæ, 1079
Pure Food, 122
Putrescent Pulps in Odontalgia, 250
Pyorrhea Alveolaris, 1100
Pyorrhea Alveolaris—A New Remedy for, 838
Pyorrhea Treatment—Procedure in, 1286

Ranula, 384
Ranula, The Origin and Treatment of, 180
Reciprocity, 785
Reciprocity Between States, 778
Relation Between Dentist and Patient, 1176
Relation of the Dentist to the Public and to His Patients, 530
Removal of the Right Superior Maxillary Bone for a Giant Cell Sarcoma, 1208
Removing Difficult Plaster Impressions, 607
Removing Richmond or Porcelain Crowns, 490
Remuneration for Services, 879
Renoform, 124
Repairing a Hole in Rubber Dam, 606
Repairing an Amalgam Filling, 490
Repairing Gold Fillings, 785
Replacing a Facing, 251
Report of Committee on Art and Invention, 913
Report of Committee on Dental Science and Literature, 812
Report of Table Clinic with the Manudynamometer, 498
Report of the Chairman of the Clinic Committee of the G. V. Black Club, 563
Report of the Clinic Committee, 1209
Restoring a Fractured Tooth, 397
Retention, A Few Points for, 289
Retention Form for Inlays, 1063
Retirement of Geo. L. Field, 1068
Roach's Moldable Porcelain, 283, 318
Roberts, G. Arthur, 614
Root Canals as They Have Been Filled, 34
Root Dryers, 380

San Francisco Dental Relief Committee, Report of the, 702
Seal All Dressings in Teeth with Cement, 381
Seal Your Medicines in Teeth with Cement, 1283
Sealing Glass Stoppered Bottles, 878
Securing the Fragments of a Lower Fractured Denture, 784
Sinusitis, 1201
Sociability, 785, 1174
Soft and Hard Teeth, 382
Some Common Mistakes in Orthodontia, 997
Some Considerations on the Cause of Abnormalities of Third Molars, 131
Some Obstacles in Crown and Bridge Work, 988
Some Principles Relative to Preservation vs. Extraction of Deciduous and Permanent Teeth, 822
Some Reasons for Instituting a Public Means of Protecting the Profession Against the Use of Poor Alloys, 406
Southern Wisconsin Dental Association, 99
Specialism, 608
State Board Examinations, 481
Status of the Dental Profession with Reference to Orthodontia, 30
Sterilization, 608
Sterilization of Water and Instruments, 389
Sterilizing Water, 121
Strength of Porcelain, 249
Studies of the Beginnings of Caries in Enamel with Reference to Filling Teeth, 144
Submarine Fillings, 877
Success with Children, 699
Sums, 1069

Taylor, C. R., 127, 255
The Contact Point in Children's Teeth, 700
The Death of Dr. W. D. Miller, 962
The Dental Club, 699
The First Permanent Molar, 698, 1175
The Guarantee Man, 380
The Guerini History, 1274
The Illinois State Dental Society, 602
The Lesson of the National Dental Association Clinics, 1002
The Outlook for 1907, 558
The Question of Plagiarism, 961
The Reorganization of the State Society in Accordance with the Illinois Plan, 975
The Scientific Side, 701
The Use of Plastics for Temporary Work, 786
Theories Made Facts, 14
To Break a Chill, 383
To Make Cement Adhere to Enamel, 1064
To Perfume Vaseline, 1063
To Practitioners Who Are Careless About Ethics, 1285
To Remove Cotton Wound Around a Broach, 381
To Remove Hardened Plaster from Bowl, 876
Treatment After the Removal of a Pulp, 969
Treatment for Hemorrhagic Diathesis, 876
Treatment of Chronic Abscess, 1285
Treatment of Pyorrhea, 788, 968
Treatment of Sensitive Dentine, 122
Treatment with Formalin and Cresol, 1285
Trials of Contributors, 369

Vaccination a Possible Cause for Dental Degeneracy, 983

What Constitutes Success in Dental Practice, 57
Where Gold Foil Is Not Indicated, 1063
Where Gold Inlays Are Indicated, 1064
Whited Sepulchers, 1174
Why Do Cement Fillings Disintegrate? 875
Wisconsin State Dental Society, 675, 843' 931, 1015, 1120

PRACTICAL HINTS.

A Combination Gold and Porcelain Inlay, 125
A Common Mistake in the Practice of Orthodontia, 1176
A Good Solvent for Cocaine, 1283
A Pure Gold Crown, 1284
Absorption of Deciduous Roots, 967
Adjustment of the Rubber Dam, 123
Adoption of Fads, 251
Advancement of Dentistry, 382
Alphozone in Dental Therapeutics, 609
Antral Empyema, 877
Applying Silver Nitrate, 878
Articulating Paper, 1283
Artificial Dentures, 698
Attaching Facings to Caps With Porcelain, 252

Be careful With Your Cotton for Treatment, 1064
Be Honest With Your Patient, 877
Building Up Gold Inlays, 606
Burnishing Gold Plate to a Tooth, 784

Carbolic Acid, 250
Care of the Eyes, 123
Cause of Empyema, 966
Cement Lining for Cavities, 1065
Cicatricial Tissue Due to Lancing, 250
Cleaning Out Root Canals, 969
Cleaning Root Canals, 381
Comparison of Gold and Amalgam, 606
Condensation of Gold, 698
Contact Points, 249
Correcting Occlusion After Making Contact Points, 381
Crowns, 490

Decay at the Border of Cavities, 1064
Desensitizing Dentine, 382
Determining What Is Best for the Patient, 985
Diagnosing Children's Teeth, 1174
Do not Varnish Inlays, 249

Examinations, 877
Extracting Deciduous Teeth, 490
Extracting Teeth for Regulating, 969
Extraction in Orthodontia, 250
Extraction of Pulps After Local Anesthesia, 121

Filling Cavites in Children's Teeth, 607
Fillings in Bicuspids, 606
Finishing Amalgam and Gold Fillings, 249
Finishing Fillings, 1063
Fistula or Sinus, 966
Fitting Gold to the Walls and Margins of Cavites, 699

Gold and Amalgam in Combination, 1174
Gutta Percha for Filling Teeth, 784
Gutta Percha for Root Filling and Setting Crowns and Bridges, 1176

Have Confidence in Yourself, 966
Hollow Gold Inlay, 493
Hollow Inlays, 123
Hygienic Conditions as an Aid to Permanency in Dental Operations, 492

Inlays for Anchoring Bridges, 251
Inserting and Finishing Gold Foil Fillings, 1175
Investment Plaster, 786
Irregularities in the Deciduous Teeth, 381

Laboratory Work, 879
Lancing the Gums, 123
Legislation for Dentists, 700
License Exchange, 877
Lower Partial Plates With Wire Connection, 784

Mallets, 1065
Manipulating Amalgam for Fillings, 701
Manipulating Moldable Porcelain, 491
Masticating Surface of an Inlay, 1284
Materia Medica, 967
Method of Removing Gold Which Flows Through Inlay Matrices, 1063
Method of Setting an Inlay, 122
Method of Taking Plaster Impressions in Partial Cases, 609
Mixing Plaster of Paris, 607
Mixing Porcelain, 879
Moral Effect of Difficult Operations, 787

Narcotile, 491
Non-corrosive Sterilizer for Dental Instruments, 252

One Cause of Dental Caries, 698
Open-face Crowns, 783
Operating on the Antrum, 968

Partial Crowns, 784
Pathology, 967
Pin Metal for Crowns and Bridges, 124
Plaster Impressions, 700
Porcelain Furnaces, 383
Preparation of Amalgam for a Filling, 607
Preparation of Impression Trays for Plaster, 786
Preparing Sensitive Cavities, 121
Prescribing Drugs, 878
Preserve the Root, 786
Proceedure in Pyorrhea Treatment, 1286
Prophylaxis, 491
Pure Food, 122
Putrescent Pulps in Odontalgia, 250

Ranula, 384
Reciprocity, 785
Relation Between Dentist and Patient, 1176
Removing Difficult Plaster Impressions, 607
Removing Richmond or Porcelain Crowns, 490
Remuneration for Services, 879
Renoform, 124
Repairing a Hole in Rubber Dam, 606
Repairing an Amalgam Filling, 490
Repairing Gold Fillings, 785
Replacing a Facing, 251
Retention Form for Inlays, 1063
Root Dryer, 380

Seal all Dressings in Teeth With Cement, 381
Seal Your Medicines in Teeth with Cement, 1283
Sealing Glass Stoppered Bottles, 878
Securing the Fragments of a Lower Fractured Denture, 784
Sociability, 785, 1174
Soft and Hard Teeth, 382
Specialism, 608
Sterilization, 608
Sterilization of Water, 121
Strength of Porcelain, 249
Submarine Fillings, 877
Substitute for Iodoform, 1284
Success With Children, 699

The Contact Point in Children's Teeth, 700
The Dental Club, 699
The First Permanent Molar, 698, 1175
The Guarantee Man, 380
The Horn Mallet, 1284
The Scientific Side, 701
The Use of Plaster for Temporary Work, 787
To Break a Chill, 383
To Make Cement Adhere to Enamel, 1064
To Perfume Vaseline, 1063
To Practitioners Who Are Careless About Ethics, 1285
To Remove Cotton Wound Around a Broach, 381
To Remove Hardened Plaster from Bowl, 876
Treatment After the Removal of a Pulp, 969
Treatment for Hemorrhagic Diathesis, 876
Treatment of Chronic Abscess, 1285
Treatment of Pyorrhea, 968
Treatment of Sensitive Dentine, 122
Treatment with Formalin and Cresol, 1285

Where Gold Foil Is not Indicated, 1063
Where Gold Inlays Are Indicated, 1064
Whited Sepulchers, 1174

CONTRIBUTORS TO PRACTICAL HINTS.

Abstein, C. E., Chicago, Ill.
Alexander, C. L., Charlotte, N. C.
Allen, E. H., Freeport, Ill.
Ames, W. V-B., Chicago, Ill.

Banzhaf, H. L., Milwaukee, Wis.
Bentley, C. E., Chicago, Ill.
Biglow, B. H., Rockford, Ill.
Black, A. D., Chicago, Ill.
Black, G. V., Chicago, Ill.
Bogue, E. A., New York, N. Y.
Bramm, B., Chicago, Ill.
Brophy, T. W., Chicago, Ill.
Buckley, J. P., Chicago, Ill.
Bullard, J. A., Chicago, Ill.
Byington, C. E., Harrisburg, Ill.

Callahan, J. R., Cincinnati, Ohio.
Carlson, K. E., St. Paul, Minn.
Case, C. S., Chicago, Ill.
Cheeseman, F. E., Chicago, Ill.
Clack, W. R., Clear Lake, Iowa.
Cook, G. W., Chicago, Ill.
Cooper, W. M., Frankfort, Ger.
Cormany, J. W., Mt. Carroll, Ill.
Cox, L. G., St. Louis, Mo.
Cross, H. A., Chicago, Ill.
Crouse, J. N., Chicago, Ill.
Cudworth, W. H., Milwaukee, Wis.
Cunningham, E., Parry Sound, Ont., Can.

Davis, L. L., Chicago, Ill.

Fernandez, E. M. S., Chicago, Ill.

Gallie, D. M., Chicago, Ill.
Geilfuss, E. A., Milwaukee, Wis.
Grisamore, T. L., Chicago, Ill.

Hadley, C. J., Chicago, Ill.
Hardgrove, T. A., Fond du Lac, Wis.
Harlan, A. W., New York, N. Y.
Haselden, C. P., Hamburg, Ger.
Haskel, L. P., Chicago, Ill.
Hershey, G. S., Michigan City, Ind.
Hewett, A. C., Chicago, Ill.
Hinkins, J. E., Chicago, Ill.
Hirschfeld, Wm., Paris, France.
Holinger, Otto, Chicago, Ill.
Houston, F. R., Green Bay, Wis.
Hutchinson, E. L., Honolulu, H. I.

Jenkins, N. S., Dresden, Ger.
Johnson, C. N., Chicago, Ill.
Johnson, G. W., Chicago, Ill.

Kelly, E. J., Chattsworth, Ill.
Kells, C. E., Jr., New Orleans, La.
Kirk, E. C., Philadelphia, Pa.

Ladewich, L., Chicago, Ill.
Latcham, H. E., Grand Junction, Iowa.
Logan, W. H. G., Chicago, Ill.
Lourie, L. S., Chicago, Ill.

Ma Whinney, Elgin, Chicago, Ill.
Maercklein, B. G., Milwaukee, Wis.
Miller, W. D., Berlin, Ger.
Moore, W. D. N., Chicago, Ill.
Moyer, W. H. K., Little Falls, Minn.

Noyes, Edmund, Chicago, Ill.

Oakman, C. H., Detroit, Mich.
Owre, Alfred, Minneapolis, Minn.

Pearce, R. M., Rock Island, Ill.
Perry, E. J., Chicago, Ill.
Plattenberg, C. B., Chicago, Ill.
Prothero, J. H., Chicago, Ill.
Pruyn, C. P., Chicago, Ill.

Reaben, W. H., McComb, Miss.
Reid, J. G., Chicago, Ill.
Richter, R. G., Milwaukee, Wis.
Roach, F. E., Chicago, Ill.
Robertson, W. A., Crookston, Minn.
Rodolph, C. F., Muscoda, Wis.
Rohland, C. B., Alton, Ill.
Royce, E. A., Chicago, Ill.

Smith, D. D., Philadelphia, Pa.
Smith, H. O., Newton, Ill.
Southwell, C., Milwaukee, Wis.
Sparks, R. E., Kingston, Ont., Can.
Stolte, H., Milwaukee, Wis.
Strange, E. B., Hillsboro, Ill.
Suggs, T. J., Aurora, Mo.

Taggart, W. H., Chicago, Ill.
Thornton, A. W., Toronto, Ont., Can.
Turner, C. R., Philadelphia, Pa.

Van Stratum, F. G., Hurley, Wis.

Ward, M. L., Detroit, Mich.
Wassall, J. W., Chicago, Ill.
Wedelstaedt, E. K., St. Paul, Minn.
Wendel, W. C., Milwaukee, Wis.
Whitslar, W. H., Cleveland, Ohio.
Willman, A. C., Kankakee, Ill.
Wood, C. A., Chicago, Ill.
Woolley, J. H., Chicago, Ill.

BIOGRAPHICAL INDEX.

Abstein, C. E., 250
Achard, Dr., 1257
Aguilar, F., 354, 1256
Alexander, C. L., 615, 647, 650, 658
Allen, A. B., 1242
Allen, E. H., 768, 782, 837, 926, 1041, 1065, 1185
Ames, W. V-B., 100, 381, 665, 785, 869, 872, 954, 967
Arnold, L. H., 453

Banzhaf, H. L., 389, 608, 675, 844, 849, 865, 1015, 1022, 1023, 1120
Barber, B. D., 1263, 1268
Barcus, J. M., 1229
Barnes, E. S., 576
Bentley, C. E., 195, 206, 583, 679, 689, 771, 838, 850, 866, 938, 968, 1036, 1132, 1242
Biglow, B. H., 187, 491
Black, A. D., 184, 354, 864, 934, 966, 975, 1023, 1120, 1122, 1286
Black, G. V., 144, 222, 352, 382, 445, 455, 498, 499, 607, 705, 777, 840, 880, 1048, 1134, 1144
Blair, E. K., 1031
Bödecker, H. W. C., 207
Bogue, E. A., 14, 210, 220, 357, 358, 381
Booth, C. N., 573
Bowers, F. H., 1139
Bramm, B., 492, 970, 1013, 1064
Brophy, T. W., 180, 203, 221, 360, 384, 437, 467, 478, 651, 869, 952, 1157, 1208, 1269
Bryant, L. E., 328
Buckley, J. P., 71, 451, 456, 587, 797, 844, 855, 867, 872, 969, 1079, 1134, 1284
Bullard, J. A., 398, 436, 607
Burroughs, E. L., 1047
Byington, C. E., 122
Byrum, J. Q., 1156

Callahan, J. R., 878
Carlson, K. E., 523, 575
Carpenter, E. R., 202, 338, 466, 663, 871, 957, 1260
Case, C. S., 340, 461, 471, 661, 822, 873, 944, 969
Chase, S. H., 566, 577
Cheeseman, F. E., 57, 251
Cigrand, B. J., 646, 1245
Clack, W. R., 43, 102, 123, 250, 575
Clark, A. C., 339
Conroy, J. K., 924, 1050
Conzett, J. V., 570, 572, 574, 1155
Cook, G. W., 79, 94, 344, 443, 475, 585, 670, 787, 812, 841, 873, 1130, 1141, 1266, 1268
Cooke, T. F., 530, 567, 574
Cooper, W. M., 121, 358, 980, 1026, 1030, 1284
Corbett, C. C., 1179, 1234
Cormany, J. W., 819, 838, 842, 967
Cox, Le Grand, 381
Cross, H. A., 788
Crouse, J. N., 452, 606, 837, 927, 1063
Cruise, R. J., 81
Cudworth, W. H., 249, 1021, 1022, 1024
Cunningham, E., 878

Daly, T. H., 54
Damron, G. H., 467
Danforth, J. S., 683, 934, 940
Davis, Dr., 65
Davis, A. P., 1024
Davis, H. E., 1034
Davis, L. L., 185, 341, 384, 460, 650, 787, 867, 957, 1262, 1267
Diamond, P. T., 934
Dittmar, G. W., 331, 436, 920, 1041, 1230
Drake, H. A., 655
Duncan, S. F., 684

Fallis, R. W., 682
Farmer, F. M., 305, 363
Fee, A. G., 931
Fernald, Dr., 1257
Fernandez, E. M. S., 456, 648, 784, 929, 1063, 1158
Frazee, O. L., 1209

Gallie, D. M., 93, 581, 767, 777, 877, 883, 930
Geilfuss, G. H., 124, 935
Gethro, F. W., 913
Gilmer, T. L., 194, 203, 439, 774
Good, R. H., 872
Goslee, H. J., 96, 279, 655, 843, 1150, 1251
Gray, B. F., 30
Grisamore, T. L., 74, 1129, 1285

Hadley, C. J., 251, 382
Hanaford, M. L., 846, 1018
Hardgrove, T. A., 684, 845, 857, 933, 935, 1024, 1100, 1286
Harlan, A. W., 122, 219, 291, 354, 490
Harned, M. R., 686
Harper, W. E., 573
Harrison, A. M., 1227
Hart, E. J., 1025
Hartzell, T. B., 227, 229, 230, 231, 239, 364
Haselden, C. P., 124
Haskell, L. P., 428, 433, 1174, 1284
Haskins, G. W., 318, 435, 839, 1049, 1051
Hawley, C. A., 69
Hazell, E. F., 833
Hershey, G. S., 125
Hewett, A. C., 253, 383, 832, 367, 1230
Hinkins, J. E., 348, 424, 479, 588, 608, 668, 786, 870, 929, 942, 1148, 1260
Hirschfeld, Wm., 297, 353, 359, 606
Holbrook, A., 945, 1068
Holinger, Otto, 83, 200, 251, 332, 441, 593, 878
Houston, F. R., 721, 877
Hutchinson, E. L., 493

Jackman, W. T., 571
James, F. S., 567
Jenkins, N. S., 125, 351, 366, 988, 1026, 1030, 1258
Johnson, C. N., 323, 342, 357, 464, 539, 566, 580, 623, 673, 691, 762, 841, 944, 951, 991, 1042, 1063, 1150, 1259

Johnson, G. W., 786, 876, 879
Johnson, W. A., 558, 1136
Jones, E. X., 650
Jones, F. C., 1040

Kabell, C., 1154
Kahlo, H. C., 1172
Kelly, E. J., 609
Kells, C. E., Jr., 34, 97, 380
Kelsey, W. F., 1201, 1255, 1258
Kester, P. J., 453
Kirk, E. C., 550, 598
Knowles, S. J., 257, 333
Koch, C. R. E., 691, 769
Kremer, F. B., 107, 238

Ladewich, L., 757, 879
Lancaster, H. N., 453, 1069
Lange, Olof, 597
Latcham, H. E., 1064, 1283
Law, W. G., 1, 66, 68, 250, 1103, 1160, 1162
Lawrence, C. R., 1092, 1149
Lind, C. L., 90
Logan, W. H. G., 594, 1133, 1284
Lourie, L. S., 997, 1052

Ma Whinney, Elgin, 637, 694, 785
Maercklein, B. G., 99, 250, 682, 846, 851, 932, 1022, 1071, 1120
Marlow, G. C., 843
Matteson, A. E., 397
McBride, R. D., 62, 64, 68
McManus, James, 1002
McMillan, H. W., 764
McVey, A. B., 835
Meade, C. C., 688, 1041
Meerhoff, C. E., 950
Merrill, H. C., 911
Miller, W. D., 122, 208, 210
Mitchell, L. J., 1027, 1028
Mitchell, W., 983
Moore, L. H., 1198
Moore, W. D. N., 265, 335, 608, 1247
Moorhead, F. B., 86, 199, 402, 444
Morris, W. E., 94
Moyer, W. H. K., 515, 570, 787
Munroe, Grafton, 1042
Murray, W. N., 105, 108, 676, 1022
Murto, W. D., 1155

Northcroft, Geo., 64, 359, 363, 1027, 1159, 1255
Noyes, E., 87, 773, 839, 1038, 1041, 1235, 1244, 1285
Noyes, F. B., 449, 590, 1043, 1051, 1146, 1232
Nyman, J. E., 591, 1150

Oakman, C. H., 759, 876
Olmsted, A. T., 834
Olson, M. W., 1191, 1245
Orr, H. N., 329, 333, 339
Orton, F. H., 226
Owre, A., 225, 366, 491

Penberthy, J. W., 241
Perry, E. J., 121, 289, 330, 341, 347, 348, 461, 607, 652, 666, 784, 1154, 1195, 1253
Plattenberg, C. B., 490, 1285
Plutschow, Otto, 442
Pritchett, T. W., 463, 1231
Prothero, J. H., 430, 436, 607
Pruyn, C. P., 89, 693, 776, 879

Rathbun, Chas., 1030
Rawlings, G. A., 574
Reaben, W. H., 192, 492
Reeves, W. T., 330, 928
Reid, J. G., 283, 350, 471, 662, 692, 785, 955, 1260
Richter, R. G., 847, 935, 938, 966
Ritter, J. W., 1243
Roach, F. E., 331, 345, 491, 649, 784, 929, 1153, 1250
Robertson, W. A., 490, 606, 636
Robinson, Field, 1028
Rodolph, C. F., 101, 249, 1021
Rohland, C. B., 123, 1169, 1223
Royce, E. A., 337, 868, 892, 958, 1065

Sachs, Wm., 310, 357
Sackett, H. T., 718, 845
Sandblom, J., 358
Searl, A. C., 566
Sitherwood, G. D., 1236
Skinner, F. H., 653
Smith, D. D., 156, 229, 230, 239, 242, 383
Smith, H. O., 249
Solbrig, O., 131
Southwell, Chas., 904, 940, 1065
Sparks, R. E., 252, 381
Spring, W. A., 1025
Stearns, C. H., 316, 368
Stolte, H., 729, 848, 857, 877
Strange, E. B., 760, 877
Suggs, T. J., 380

Taggart, W. H., 76, 122, 325, 382, 433, 492, 609, 644, 1115, 1154, 1249, 1283
Tenney, L. S., 464
Thompson, C. N., 1209
Thornton, A. W., 546
Todd, G. S., 574
Torrence, L. B., 930, 1134, 1159

Van Stratum, 631, 785

Ward, M. L., 406, 457
Wassall, J. W., 48, 106, 108, 252, 659, 871, 943, 959, 1265
Wedelstaedt, E. K., 563, 896, 936, 1063
Weeks, T. E., 367
Weiss, O. A., 233
Wells, J. O., 365
Wendel, W. C., 865, 931, 933, 934, 968, 1021
Whitslar, W. H., 838, 969
Willman, A. C., 784
Wood, C. A., 123
Woodbury, C. E., 569, 575
Woolley, J. H., 89, 98, 472, 596, 950, 1004, 1264
Work, C. M., 107, 236
Wright, C. M., 1007
Wright, J. J., 677
Wright, P. B., 101

Younger, W. J., 350.

LIST OF CONTRIBUTORS TO VOLUME XXI

Alexander, C. L.	Charlotte, N. C.
Allen, E. H.	Freeport, Ill.
Banzhaf, H. L.	Milwaukee, Wis.
Biglow, B. H.	Rockford, Ill.
Black, A. D.	Chicago, Ill.
Black, G. V.	Chicago, Ill.
Bogue, E. A.	NewYork, N. Y.
Bramm, B.	Chicago, Ill.
Brophy, T. W.	Chicago, Ill.
Buckley, J. P.	Chicago, Ill.
Bullard, J. A.	Chicago, Ill.
Carlson, K. E.	St. Paul, Minn.
Case, C. S.	Chicago, Ill.
Cheeseman, F. E.	Chicago, Ill.
Clack, W. R.	Clear Lake, Iowa.
Cook, G. W.	Chicago, Ill.
Cooke, T. F.	Burlington, Iowa.
Cooper, W. M.	Frankfort-on-Main, Germany.
Corbett, C. C.	Edwardsville, Ill.
Comany, J. W.	Mt. Carroll, Ill.
Daly, T. H.	Mt. Carmel, Ill.
Davis, L. L.	Chicago, Ill.
Farmer, F. M.	London, England.
Frazee, O. L.	Springfield, Ill.
Gallie, Don M.	Chicago, Ill.
Gethro, F. W.	Chicago, Ill.
Goslee, H. J.	Chicago, Ill.
Gray, B. F.	Colorado Springs, Colo.
Hardgrove, T. A.	Fond du Lac, Wis.
Harlan, A. W.	New York, N. Y.
Haskins, G. W.	Chicago, Ill.
Hinkins, J. E.	Chicago, Ill.
Hirschfield, Wm.	Paris, France.
Houston, F. R.	Green Bay, Wis.
Jenkins, N. S.	Dresden, Germany.
Johnson, C. N.	Chicago, Ill.
Johnson, W. A.	Peoria, Ill.
Kells, C. E., Jr.	New Orleans, La.
Kelsey, W. F.	Marseilles, France.
Kirk, E. C.	Philadelphia, Pa.
Knowles, S. J.	Chicago, Ill.
Ladewich, L.	Chicago, Ill.
Law, W. G.	Berlin, Germany.
Lawrence, C. R.	Bethany, Ill.
Lourie, L. S.	Chicago, Ill.
MaWhinney, Elgin	Chicago, Ill.
Maercklein, B. G.	Milwaukee, Wis.
Matteson, A. E.	Chicago, Ill.
McManas, James	Hartford, Conn.
Merrill, H. C.	Cologne, Germany.

Mitchell, W.	London, England.
Moore, L. H.	Appleton, Wis.
Moore, W. D. N.	Chicago, Ill.
Moorhead, F. B.	Chicago, Ill.
Moyer, W. H. K.	Little Falls, Minn.
Oakman, C. H.	Detroit, Mich.
Olson, M. W.	Galesburg, Ill.
Perry, E. J.	Chicago, Ill.
Reaben, W. H.	McComb, Miss.
Reid, J. G.	Chicago, Ill.
Robertson, W. A.	Crookston, Minn.
Royce, E. A.	Chicago, Ill.
Sachs, Wm.	Berlin, Germany.
Sackett, H. T.	Fond du Lac. Wis.
Smith, D. D.	Philadephia, Pa.
Solbrig, O.	Paris, France.
Southwell, Charles.	Milwaukee, Wis.
Stearns, C. H.	Owatonna, Minn.
Stolte, H.	Milwaukee. Wis.
Strange, E. B.	Hillsboro, Ill.
Taggart, W. H.	Chicago, Ill.
Thompson, C. N.	Chicago, Ill.
Thornton, A. W.	Toronto, Ont., Canada.
Van Stratum, F. G.	Hurley, Wis.
Ward, M. L.	Detroit, Mich.
Wassall, J. W.	Chicago, Ill.
Wedelstaldt, E. K.	St. Paul, Minn.
Whitslar, W. H.	Cleveland, Ohio.
Wright, C. M.	Cincinnati, Ohio.

TABLE OF CONTENTS.

ORIGINAL COMMUNICATIONS.

A Brief Review of the Chemistry of Pulp Decomposition, with a Rational Treatment for This Condition and Its Sequelæ ... 1079
A Case of Hemorrhage ... 759
A Case of Multiple Neuritis of Dental Origin ... 402
A Comparative Review of the Last Twenty-five Years of Dentistry as Gathered from a Study of the Proceedings of This Society ... 1185
A Consideration of General Therapeutics as Applied to Dentistry ... 797
A Few Points for Retention ... 289
A Method of Anchoring Bridges by Swaged Inlaid Abutments ... 48
A New Remedy for Pyorrhea Alveolaris ... 828
A Plea for More Conservative Dentistry ... 980
Attention to Detail in Taking Impressions of the Mouth ... 398
Case of Fracture of Inferior Maxilla, with Treatment ... 184
Changes Incident to Correcting Distal Occlusions of the Lower Arch ... 1103
Dentistry a Specialty of Medicine ... 718
Dental Paradoxes ... 1007
Dental Research Work ... 1092
Discrimination in the Selection of Filling Materials ... 623
Dr. Ollendorf's System of Cast Gold Bridges ... 810
Ethics ... 991
Ethics on Honesty in the Profession ... 760
Extraction of Teeth ... 1191
Gold Fillings vs. Inlays ... 883
Gold Inlays ... 257, 265
Hemorrhagic Diathesis ... 1013
If Not, Why Not? ... 546
Interstate License Exchange ... 721
Limitations of Dental Education ... 705
Malocclusions of Class II ... 1
Method of Root Restoration ... 636
Methods in Prosthesis Which Have Developed From the Gold Inlay ... 615
Methods and Principles of Packing Gold ... 896
Misconceptions Concerning Porcelain ... 757
Mistakes I Have Made in Porcelain ... 185
Modern Treatment of Empyema of the Antrum of Highmore ... 729
Narcotile ... 192
Notes of a Case of Trismus and of a Case of Abscess in the Palate ... 305
Observations on the Retention of Pulpless Teeth in the Jaws, with Indications for Their Removal ... 291
On the Advantages of a Good Dental Club ... 515
On the Packing of Gold in the Average Cavity ... 904
Partial Dentures ... 1195
Points of Difference ... 156
President's Address ... 54, 424, 631, 637, 911, 1198
Pyorrhea Alveolaris ... 1100
Removal of the Right Superior Maxillary Bone for a Giant Cell Sarcoma ... 1208
Report of Committee on Art and Invention ... 913
Report of Committee on Dental Science and Literature ... 812
Report of Dr. Taggart's New Process of Making Gold Inlays ... 279
Report of Table Clinic with the Manudynamometer ... 498
Report of the Clinic Committee ... 1209
Restoring a Fractured Tooth ... 397
Roach's Moldable Porcelain ... 283, 318
Root Canals as They Have Been Filled ... 34
Sinusitis ... 1201
Some Common Mistakes in Orthodontia ... 997
Some Considerations on the Causes of Abnormalities of Third Molars ... 131
Some Obstacles in Crown and Bridge Work ... 988
Some Principles Relative to Prevention vs. Extraction of Deciduous and Permanent Teeth ... 822
Some Reasons for Instituting a Public Means of Protecting the Profession Against the Use of Poor Alloys ... 466
Status of the Dental Profession with Reference to Orthodontia ... 30
Sterilization of Water and Instruments ... 389
Studies of the Beginnings of Caries in Enamel with Reference to Filling Teeth ... 144
Theories Made Facts ... 14
The Advantages of Cement as a Cavity Lining ... 1179
The Cast Inlay ... 1115

The Clinic 816
The Conservation of the Bicuspids.................................... 297
The Dentist of Tomorrow.................................... 819
The Development of the Porcelain Crown.................................... 187
The Lesson of the National Dental Association Clinics.................................... 1002
The Nature of Blows and the Relation of Size of Plugger Points to Force as Used in Filling Teeth.................................... 499
The Origin and Treatment of Ranula.................................... 180
The Outlook for 1907.................................... 558
The Problem of Condensation and Specific Gravity of Gold Fillings.................................... 523
The Relation of the Dentist to the Public and to His Patients.................................... 530
The Reorganization of the State Society in Accordance with the Illinois Plan....... 975
The Sequel of Inlays.................................... 892
The Surgical Correction of Cleft Palate and Harelip.................................... 1071
The Treatment of Children's Teeth.................................... 539
The Vital Side of the Dental Problem.................................... 550
Vaccination, a Possible Cause of Dental Degeneracy.................................... 988
What Constitutes Success in Dental Practice.................................... 57
Why I Make Contact Points.................................... 48

PROCEEDINGS OF SOCIETIES.

American Dental Society of Europe........................62, 207, 350, 1025, 1159, 1255
Black G. V. Club.................................... 563
Chicago-Odontographic Society........................71, 194, 322, 428, 579, 644, 1245
Illinois State Dental Society........................684, 761, 832, 920, 1031, 1122, 1223
Minnesota State Dental Association....................................105, 225, 364
Odontological Society of Chicago....................336, 460, 659, 867, 942, 1150, 1259
Southern Wisconsin Dental Association.................................... 99
Wisconsin State Dental Society..............................675, 843, 931, 1015, 1120

SOCIETY DISCUSSIONS.

A Case of Multiple Neuritis of Dental Origin.................................... 437
A Comparative Review of the Last Twenty-five Years of Dentistry as Gathered from a Study of the Proceedings of This Society.................................... 1235
A Plea for More Conservative Dentistry.................................... 1025
A Consideration of General Therapeutics as Applied to Dentistry.................................... 864
A Method of Anchoring Bridges by Swaged Inlaid Abutments.................................... 105
An Accurate Method in Orthodontia.................................... 62
Attention to Detail in Taking Impressions of the Mouth.................................... 428
Case of Fracture of Inferior Maxilla, with Treatment.................................... 206
Changes Incident to Correcting Distal Occlusions of the Lower Arch.................................... 1159
Dental Research Work.................................... 1136
Dentistry a Specialty of Medicine.................................... 848
Discrimination in the Selection of Filling Materials.................................... 659
Ethics 1031
Extraction of Teeth 1242
Gold Fillings vs. Inlays...... 920
Gold Inlays 323
Interstate License Exchange.................................... 846
Limitations of Dental Education.................................... 761
Malocclusions of Class II.................................... 62
Methods in Prosthesis Which Have Developed from the Gold Inlay.................................... 644
Methods and Principles of Packing Gold.................................... 931
Modern Treatment of Empyema of the Antrum of Highmore.................................... 847
Notes on a Case of Trismus and a Case of Abscess in the Palate.................................... 359
Observations on the Retention of Pulpless Teeth in the Jaws.................................... 350
On the Packing of Gold in the Average Cavity.................................... 938
Origin and Treatment of Ranula.................................... 194
Partial Dentures 1245
Points of Difference.................................... 225
President's Address 460, 675, 684
Pulp Treatment 1122
Removal of the Right Superior Maxillary Bone for a Giant Cell Sarcoma..........1259
Report of Committee on Dental Science and Literature.................................... 832
Roach's Moldable Porcelain.................................... 337
Root Canals as They Have Been Filled.................................... 71
Sinusitis 1255
Some Common Mistakes in Orthodontia.................................... 1042
Some Considerations on the Causes of Abnormalities of Third Molars.................................... 207
Some Obstacles in Crown and Bridge Work.................................... 1028
Some Reasons for Instituting a Public Means of Protecting the Profession Against the Use of Poor Alloys.................................... 445
Studies of the Beginning of Caries in Enamel with Reference to Filling Teeth...... 210
Theories Made Facts.................................... 69

The Advantages of Cement as a Cavity Lining ... 1223
The Cast Inlay ... 1150
The Clinic ... 364
The Conservation of the Bicuspids ... 356
The Dentist of Tomorrow ... 833
The Importance of Saving Deciduous and Permanent Teeth ... 867
The Reorganization of the State Society in Accordance with the Illinois Plan ... 1015
The Sequel to the Inlay ... 942
The Surgical Correction of Cleft Palate and Harelip ... 1120
The Vital Side of the Dental Problem ... 579
Vaccination a Possible Cause of Dental Degeneracy ... 1027
Why I Make Contact Points ... 99

EDITORIALS.

A Duty to the Profession ... 110
A Revolution in the Technique of Gold Inlay Work ... 244
An Endowment Needed ... 874
Boil It Down ... 1053
Courtesy in Correspondence ... 1168
Death of Hon. S. W. McInnis, D. D. S., L. D. S., M. P. P. ... 1273
My Creed ... 371
1908 ... 1272
Reciprocity Between States ... 778
State Board Examinations ... 481
The Activity in Dental Societies ... 695
The Death of Dr. W. D. Miller ... 962
The Guerini History ... 1274
The Illinois State Dental Society ... 602
The National Dental Association ... 780
The Question of Plagairism ... 961
Trials of Contributors ... 369
Why Do Cement Filling Disintegrate? ... 875

EDITOR'S DESK.

Editor's Desk ... 111, 245, 371, 483, 963, 1054, 1104, 1275

DOMESTIC CORRESPONDENCE.

Letter from J. W. Byers ... 247
Letter from F. S. Casper ... 1058
Letter from J. W. Cormany ... 1277
Letter from Harry C. Kahlo ... 1172
Letter from New York ... 117, 372, 485, 603, 696, 780, 1170, 1278
Letter from E. J. Perry ... 1060
Letter from Geo. C. Poundstone ... 1062
Letter from C. B. Rohland ... 1169

REVIEWS AND ABSTRACTS.

A Manual of Normal Histology and Organography ... 372
A Manual of Pathology ... 372
American Text Book of Prosthetic Dentistry ... 484
Anatomical Nomenclature ... 485
Atlas and Text Book of Dentistry ... 116
Atlas und Lehrbuch der Modernen Zahnartzlichen Metalltechnik ... 603
Lecture Notes on Chemistry for Dental Students ... 116

CLINICS.

G. V. Black Dental Club ... 598

DENTAL COLLEGE COMMENCEMENTS.

Barnes University Dental Department ... 794
Chicago College of Dental Surgery ... 795
Colorado College of Dental Surgery ... 794
Indiana Dental College ... 795
Louisville College of Dentistry ... 974
New Orleans College of Dentistry ... 974
New York College of Dentistry ... 795
North Pacific Dental College ... 794
Northwestern University Dental School ... 882
St. Louis Dental College ... 795
University of Michigan College of Dental Surgery ... 882

University of Pennsylvania Department of Dentistry.... 796
University of Southern California 794
Washington University Dental Department.... 795

OBITUARY.

Billmeyer, U. D.... 125
Miller, W. D.... 974, 1052
Roberts, G. A.... 614

IN MEMORIAM.

Chittenden, C. C.... 255
Gill, Frank C.... 388
Kinder, W. J.... 611
Leonard, Geo. R.... 694
Taylor, C. R.... 127, 255

DENTAL SOCIETY ANNOUNCEMENTS.

Alabama Dental Association.... 495
American Dental Society of Europe.... 126, 253, 701, 1287
American Society of Orthodontists 386
Arkansas State Board of Dental Examiners.... 253
Australian Dental Congress.... 493
Black, G. V., Club.... 129, 1287
California State Board of Dental Examiners.... 385
Chicago College of Dental Surgery Alumni Meeting.... 1287
Chicago-Odontographic Society 385
Detroit Dental Society 254
Eastern Indiana Dental Association.... 493
Georgia State Dental Society.... 493
Idaho State Board of Dental Examiners.... 1177
Illinois State Board of Dental Examiners.... 494, 971, 1066
Illinois State Dental Society.... 494, 788
Indiana State Dental Association.... 494, 880
Institute of Dental Pedagogics.... 1178, 1287
Interstate Dental Fraternity.... 789
Iowa State Board of Dental Examiners.... 126, 495, 1177
Iowa State Dental Society.... 610
Jamestown Dental Convention.... 128, 613, 702, 788, 880, 971, 973
Kansas State Board of Dental Examiners.... 610
Kentucky State Board of Dental Examiners.... 610, 1177
Kentucky State Dental Association.... 385
Los Angeles Association of Dental Alumni.... 385
Minnesota State Board of Dental Examiners.... 385, 610, 1067
Mississippi Dental Association.... 495
Missouri State Dental Association.... 610
Montana State Dental Society.... 384
Montgomery County Dentists.... 880
National Association of Dental Examiners.... 387
National Association of Dental Faculties.... 611
National Dental Association.... 495, 612, 613, 702, 703, 790, 971
New Jersey State Board of Dental Examiners.... 1067
New Jersey State Dental Society.... 386
New York State Dental Society.... 494
North Dakota Dental Association.... 788
Northern Illinois Dental Society.... 970
Ohio State Board of Dental Examiners.... 702, 1178
Ohio State Dental Society 126, 1178
Ontario Dental Society.... 126
Pennsylvania State Board of Dental Examiners.... 701
San Francisco Dental Society.... 253
St. Louis Dental College Alumni Clinic.... 495
St. Louis Society of Dental Science.... 254
South Dakota Dental Society 385
South Dakota State Board of Dental Examiners.... 611, 1287
Southern California Dental Association.... 254
Southern Illinois Dental Association 1067
Texas State Board of Dental Examiners.... 1177
Texas State Dental Association 494
The First French Congress of Stomatology.... 387
Washington University Alumni Association.... 386
West Virginia State Board of Dental Examiners.... 610
Wisconsin State Board of Dental Examiners.... 126, 611
Wyoming State Board of Dental Examiners.... 702

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, JANUARY, 1907. No. 1

MALOCCLUSIONS OF CLASS II.*

BY WILLIAM G. LAW, D. D. S., BERLIN, GERMANY.

Mr. President and Members of the American Dental Society of Europe.

The subject of my contribution to this afternoon's program, "Malocclusions of Class II," is one which has commanded more attention and to which more study has been given during the past few years, than any other subject in orthodontia. Today the results obtained from the treatment of these cases is vastly different from that of a few years ago and, though men still differ regarding some points, yet the study of faces, what the correct proportions and balance should be, together with the lessons taught by our successes and our failures, has done much toward making diagnosis clear and the treatment simpler, and is slowly but surely drawing all men who are interested in the correction of malocclusions together, so that soon all will work in harmony with one purpose—aiding nature toward perfect development.

Today, nearly all men who practice orthodontia recognize one great principle as absolutely necessary to perfect results—the principle of occlusion. "Occlusion is the basis of the science of orthodontia" and it would be impossible to have perfect occlusion unless we have the full complement of teeth. Even as all of the teeth are necessary for normal occlusion, so are they also equally necessary and important for the correct proportions of the face. In fact, as that part of the face below the nose is almost entirely dependent upon the relative position of the teeth for its beauty or deformity, the nearer they are to perfection in arrangement, the nearer the face approaches the ideal in its outline and contour. When one studies the arrangement of the teeth in a perfect denture, if he be a true student of both occlusion and art, he cannot but help see that this arrangement is the correct one and the only one which the teeth could have to perform their functions properly. The interlocking of the cusps of the teeth hold them in their correct positions and gives the greatest possible masticating surface. This is normal occlusion (Fig. 1) and represents how the teeth of all men on earth, irrespective of race, should occlude. The only difference in the various races is in their teeth being set at different slants, and in the arches being placed with varying relation to the rest of the skull, according to race and type, thus giving to their face and contour the expression which is characteristic of their race. Normally the teeth of all men have the same general form and arrangement.

---

*Read before the American Dental Society of Europe, Berlin, Germany, August, 1906.

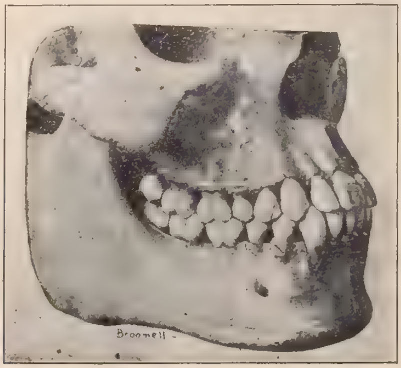


Fig. 1.

CLASSIFICATION.

For convenience Dr. Angle has divided orthodontia into three classes. Class II is divided as follows:

Div. I. Bilaterally distal, protruding upper incisors. (Usually mouth breathers.)

Subdivision. Unilaterally distal, protruding upper incisors. (Usually mouth breathers.)

Division II. Bilaterally distal, retruding upper incisors.

Subdivision. Unilaterally distal, retruding upper incisors.

In order that a case may be placed in Class II, the lower arch must be distal to normal.

Div. I contains all cases in which so-called protrusion exists. You will notice in the classification that "protrusion" and "retrusion" are not recognized. It reads *"protruding* upper incisors" and *"retruding upper incisors."* The teaching of Dr. Angle is not that we have in reality cases of upper protrusion, but only apparent ones. Cases of *upper protrusion,* if they exist at all, are *extremely rare.* I have *never* seen a case of *actual protrusion* in Class II. To have an upper protrusion, the entire maxilla must be in a position mesial to a point which would be correct in the given case for harmonious facial balance. That there are many cases of apparent protrusion is all too true, and these cases are often taken for *actual* protrusions. They are often very deceiving because of the fact that the upper lip is generally protruding more or less in the center. But when one looks at the face in the cuspid region, one sees a flatness that should not exist. This part of the face requires a certain prominence, and when the arch is narrow, the lack of fullness is very noticeable.

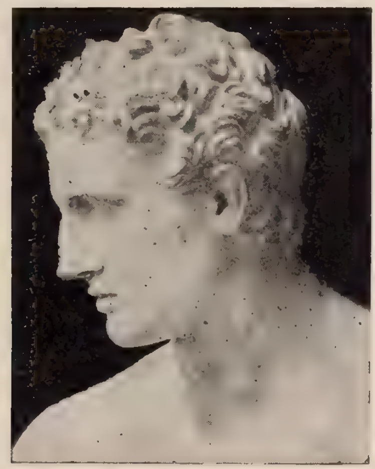


Fig. 2.

Shows the profile of the Mars which is most beautiful in balance and contour. This is a perfect Greek type. The perfect balance, together with strength in all of the features is most noticeable. It is a face that the orthodontist may study with great profit.

This, together with a marked distal position of the lower arch and jaw, gives an exaggerated appearance to the deformity, and then the odontocide (he who must extract) is sure he has a case of "protrusion" and decides that from two to six teeth must be removed.

If occlusion is the basis of the science of orthodontia, and it is, why do men in the light of our present-day knowledge, see (?) protrusions everywhere, and tear down this beautiful structure by removing some of its integral parts. They do this they say "to make room" or "to equalize" or "because the child has inherited its father's teeth above and its mother's teeth below," or some other equally absurd reason. The teeth of all people grow proportionately harmonious as to shape and size, and, if the teeth erupt normally, there will always be plenty of room for the full number in the arches, for the teeth in erupting stimulate the growth of the process and jaws.

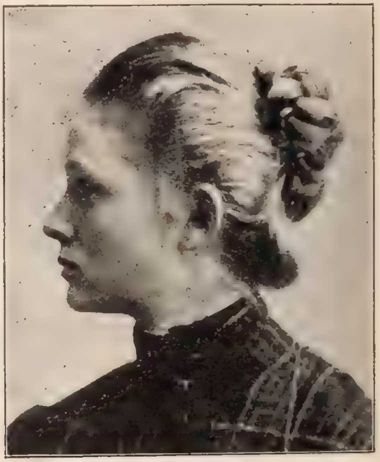


Fig. 3. Case 1.

Figs. 3, 4, 5. Show profile of face and models of Case 1. The photo (Fig. 3) shows case after treatment. There was no picture taken before treatment, much to my regret. The improvement of the facial lines and profile after correction is most marked. The correction was accomplished by expansion of the upper arch, retracting incisors to the correct line of the arch and bringing the lower arch and jaw to correct occlusion and position by bending the jaw at ramus. The upper molars were *not* retracted as will readily be seen by examining the models.

Extraction has *no place* in modern orthodontia. We do not even admit of *rare exceptions* as was done by us a few years ago.

The loss of teeth makes the treatment of these cases more difficult and a failure from the standpoint of occlusion and facial balance,—because the arches are so constructed that the removal of one tooth ruins the possibility of that mutual support which each tooth renders to its neighbor and to the entire denture, which under conditions of normal occlusion always exists.

Working from the great principle—occlusion as the basis of all orthodontic operations—we make our aim, harmony of the facial lines and contour. Perfect harmony cannot be established without normal occlusion, which means each tooth must be present in both arches and each tooth in its proper position. Therefore harmony means much—perfect occlusion, correct slant of the teeth for each individual and proper width of the arches. When we have all these conditions present we *will* have harmony and the face will possess the beautiful balance *which nature intended.*

CONDITIONS CAUSING CLASS II.

Before going further, just a word regarding the conditions which cause cases of Class II. Adenoids, enlarged tonsils and nasal troubles. Every case of Div. I, and many of Div. II, has as a present or past cause, one or all of these conditions. That these troubles and malocclusions go hand in hand is absolutely certain. Eminent rhinologists claim that adenoids cause other forms of malocclusions than those of Class II. Of this we are not sure, but that they help and to a great degree at times, we do however believe.

The result of adenoid growths in Class II is easily recognized by the long narrow arch, often high and pointed. The nose is not wide enough at its base. The nostrils are sunken and undeveloped. There is, if I may so express it, a thin expression to the entire face. Mouth breathing often continues even after the adenoids have been removed —unless they were removed early. These growths appear, generally, about the fifth or sixth year, but they may also appear at any age, infancy not excepted. They usually disappear between the twelfth and seventeenth year by atrophy. Enlargement of the faucial tonsils generally accompany these growths and they add greatly to the difficulty. The adenoids are situated in the naso-pharynx, and, as a normal growth, no attention is ever given them. When they become pathological they enlarge, finally becoming an obstruction causing nasal occlusion with resulting mouth breathing. Normal breathing, together with the action of the muscles which assist in this function are most important factors in the formation of the nasal and oral cavities.

As in all cases the mouth is habitually open, the jaw is dropped and forward development is stopped. The muscles which are attached to the maxilla are put on a tension and consequently the sides are drawn lingually. The pressure of the tongue being removed from the roof of the mouth and the sides of the teeth, and the natural air pressure being taken from the nose into the mouth, the natural results are that the palate rises, the arch becomes long and narrow and also the voice becomes more or less affected as the natural resonance construction is much obstructed and altered. One can readily see how a child with a gift to be a singer or a speaker would be handicapped by this condition. The earlier these patients are placed in the care of a rhinologist the better.

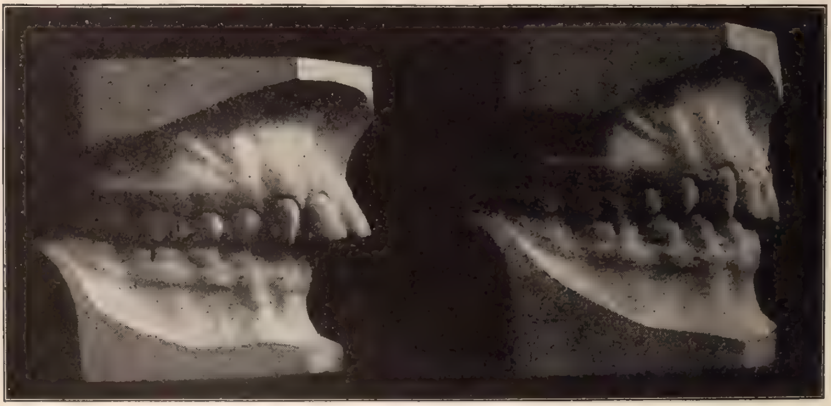


Fig. 4. Case 1. Fig. 5.

When these growths are removed before the lower first molars shift to a distal position, their occlusion will be normal. But if they are not removed until after the lower molars have taken a distal position, then forward development will be stopped and mechanical aid will have to be given in order for it to assume the correct relation to the upper molar, otherwise the distal position will grow more marked; then the case may be one of either Div. I. or Div. II.

DIAGNOSIS AND TREATMENT.

Of the three classes into which orthodontia has been divided, Class II has been, and still is, the class in which errors of treatment most often occur. These cases are often badly treated, chiefly because of a lack of ability on the part of the dentist or orthodontist to diagnose them correctly. Naturally, if the treatment be based upon a faulty diagnosis, the case must be a failure to the extent that the diagnosis was wrong.

To correctly diagnose one must know occlusion and the relation which occlusion bears to facial harmony. It is very necessary also to know the correct slant of the teeth in each individual case, for this slant is most important in the formation of the facial lines.

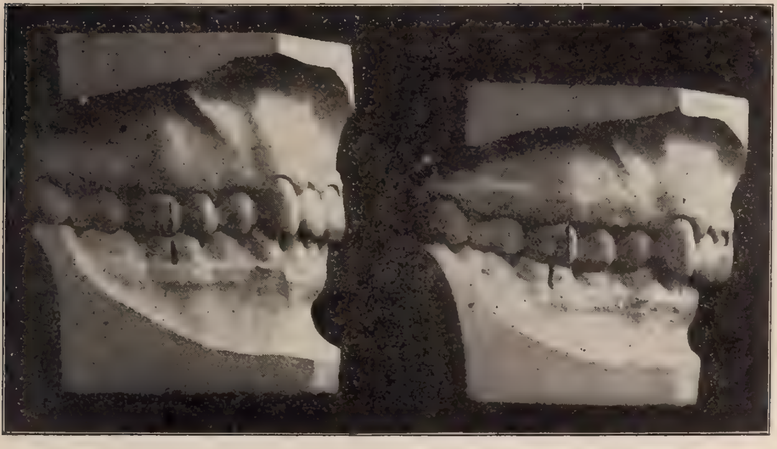


Fig. 6. Case 2. Fig. 7.

Figs. 6, 7, 8, 9 show profiles of face and models before and after treatment. This case was treated as was Case 1. The condyles being in their correct positions when occlusion was corrected. Fig. 9 shows a great improvement in the facial lines.

In our young patients we must be able to see the effect of our treatment, not only two or five but ten and fifteen years hence, for our work is for the life of our patient. The faces of our little patients are far from being developed when our treatment is completed, and it often requires very close study to know just how wide to make the arches, and how full the lips should be. We must take into consideration the type of the face and teeth. Nature works altogether in types, and each is, normally, a perfectly balanced face. We have variations from these types also, but in each case if the teeth are in normal occlusion, the face will be balanced. To properly appreciate this is art, and that all men have not the artistic ability is true, because, unfortunately they are not students of the artistic, the harmonious and the beautiful. Diagnosis in Class II would indeed be most difficult in most cases were it not for the fact that we have certain guides upon which we can with the utmost confidence rely.

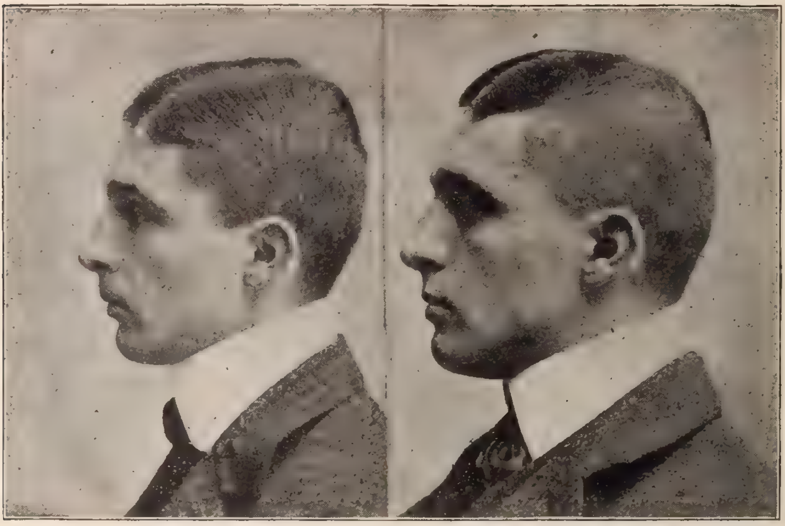


Fig. 8. Case 2. Fig. 9.

We do not believe that heredity plays any part in causing these malocclusions, but that all of the conditions causing these cases come into existence and operate after the birth of the child. The causes, as we have seen, are not in the teeth or jaws themselves, but in surrounding influences. One often hears of the disproportion of the teeth of the two arches, but there is no ground for such belief. In fact such a thing is impossible, children are not born with other parts out of proportion. Nature always harmonizes. Nature reproduces but never duplicates. The child never looks exactly like either parent. It may inherit a certain form of the teeth, but that is all.

In every case, if the teeth are in normal occlusion and the arches have the proper fulness, the face will be in balance and will be pleasing to the eye. But some men seem to think that most cases of Div. I are protrusions and they extract a number of teeth and retract the upper anterior teeth into retrusion. The excuse given is that the upper arch cannot be moved distally. This, of course, is an error, for the entire arch can be retracted and to a large degree, if necessary. Few orthodontists question that point. However, this is a movement which is never to be desired, and, in the vast majority of cases, when it is accomplished makes that part of the face below the nose out of balance. It is retrusion to the degree that the upper arch (molars) has been moved distally. We really need all of the room in the arch posterior to the upper first molar for the eruption of the second and third molars. If then, we do not retract the upper molars they become a basis of diagnosis which, in the vast majority of cases, becomes positive. Now, if the upper first molar can be relied upon as an accurate point, mesio-distally, see what a great question is at once solved. There remains but to make the upper arch ideal in form for the special case, and to shape the lower arch and jaw so that the teeth occlude perfectly.

This subject was first brought before the profession by Dr. Angle in a paper entitled, "The Upper First Molar as a Basis for Diagnosis," presented before the American Society of Orthodontists in Chicago last October. He considered that, as a rule, the upper first molar should not be moved distally; that mesio-distally they are nearly always correct, and that they are the only teeth which can be relied upon as a basis for correct diagnosis.

During the past two years, I have made special duty and observation of this point regarding the upper first molar in Class II cases, and I am thoroughly convinced of its reliability, and that it erupts normally correct mesio-distally. I have never seen a case of Class II where I considered the upper first molar to be mesial to normal. (Mutilated cases are not considered).

That the upper incisors are often protruding to a marked degree we know, but that does not influence the position of the first molar. The fault in the upper arch is that it is too narrow, especially in the cuspid region. Expansion to the required fulness and retraction of the incisors to the correct line of the arch is clearly indicated.

Mesio-distally I believe the entire trouble to lie in the lower arch and jaw. There is considerable abnormality in the inferior maxilla in these cases, it having stopped its forward development to a great degree. In correcting these cases, the jaw itself must be brought forward to its originally intended position as well as correcting the occlusion. By this I do not mean a shifting enough to allow the teeth to occlude properly and still be able to bite distally, but that the bone must be changed also and made to assume its proper position, so that when the teeth occlude correctly, it will be impossible to bite back to a distal position. The condyles will then be in their normal places. There should be no "jumping the bite" movement—retaining the teeth forward and allowing the bone to gradually slide backward with the condyles thus leaving the teeth and process in a slanting, half forward position. This only half corrects the facial deformity. But by making the bone the correct shape and having the condyles in the normal positions, the face is made fuller, develop-

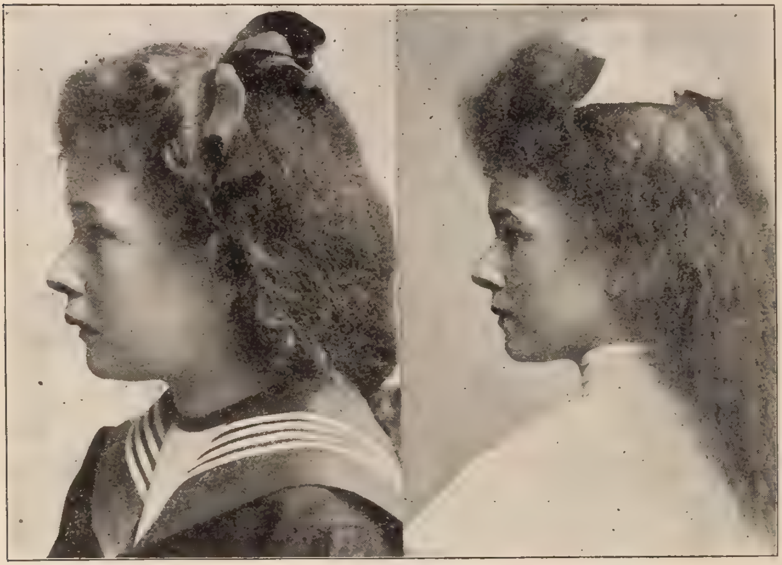


Fig. 10. Case 3. Fig. 11.

Figs. 10, 11, 12, 13 show profiles and models of Case 3. This case was also corrected by a change in the lower jaw as Cases 1 and 2. The face in Fig. 11 shows corrected case and Fig. 13 the model after treatment.

ment goes on normally, the teeth are retained much easier, and the result is in every way better.

As a rule the temporary teeth erupt normally, mesio-distally. The percentage of Class II cases in the temporary teeth I believe to be very low. Occasionally we will have a pronounced case, and when we do we will find the fault to lie in the lower jaw the same as in the permanent set. The upper temporary teeth being mesio-distally normal, the first permanent molar would erupt normally. Occasionally we find a second deciduous molar is lost prematurely and that the permanent molar moves forward, filling the space. I read you Dr. Angle's explanation of this movement, its result and effect upon the anterior teeth:

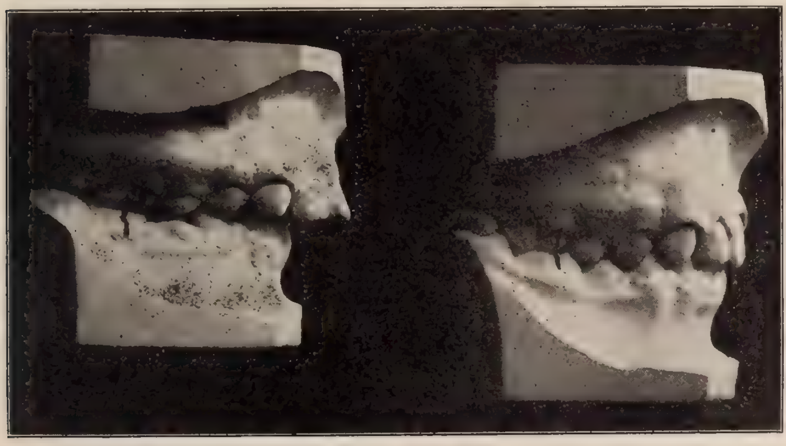


Fig. 12. Case 3. Fig. 13.

"If the first molar does move forward it does precisely, though *prematurely,* what it would do and must do ultimately in the growth of the jaws and dentures in order to permit the second and third molars to take their position in the line of occlusion. So it would not finally be abnormally placed, but those teeth of the permanent set anterior to it would most probably suffer as to position as they erupted and tried to gain position in the line of occlusion, for the reason that the alveolar process would not have been sufficiently stretched in anticipation of their coming on account of the deciduous teeth being gradually carried forward by the eruption of the permanent molars, as they would be had not the deciduous molar been removed."*

And one can easily see that is what would happen. The teeth anterior to the first molar are the ones which would be too far distal. I have seen several cases very similar to the one Dr. Angle used to explain this point. The side of the face on which loss of temporary molar has occurred will not be prominent enough in the cuspid region. Occasionally it is a cuspid which is out of the line of the arch, but more often it is a bicuspid. But whichever tooth it happens to be, the teeth anterior to it on that side must be brought forward enough to allow the displaced tooth to be brought into line and occlusion (normal) established. Then both sides of the arch will balance and the lips be brought to their proper proportions. In all these cases of Class II it is so necessary to keep in mind the fact that the face requires fulness in certain parts, and if these contours are not there the result is that the face looks weak. Too much

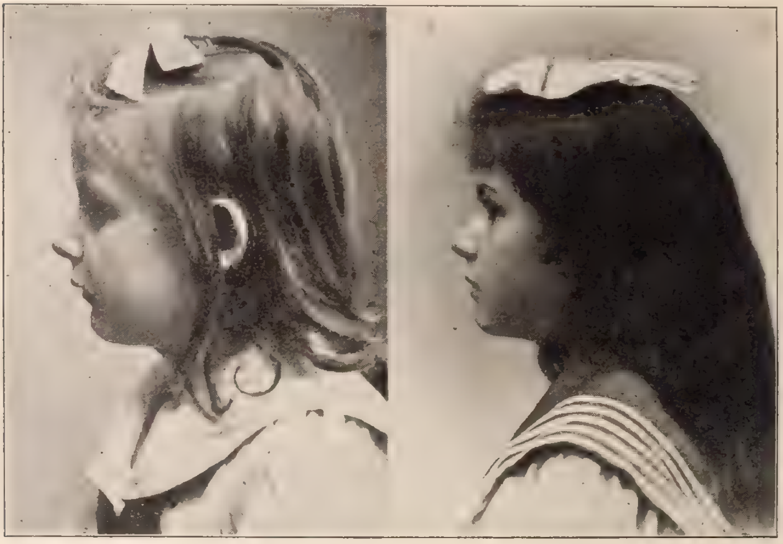


Fig. 14. Case 4. Fig. 15.

Figs. 14, 15 show face of Case 4 before and after treatment. In this case also the jaw was changed. The result, Fig. 15, shows decided improvement.

---

*ANGLE.—"The first upper molar as a basis for diagnosis."

fulness is more to be desired than too little. This refers to young patients especially. You all know that often when a boy's teeth are erupting, if everything progresses normally, his mouth appears unduly large and the lips too full. It is very true that they are a trifle full at this time, but you must remember that he is growing and that all the features will develop until they are in harmony. This is invariably the case. We have all had cases where the mouth looked a little prominent for the first few months after correcting the occlusion of the teeth, but gradually, as development progressed in the surrounding parts, the appearance of over fulness disappeared, leaving the lips and cheeks in proper contour.

I have seen many cases where the upper arch had been retracted (without extraction) where the face looked decidedly weak on account of the entire face below the nose being in a retruded position; while before the treatment, although the features were in bad proportion, there was more strength.

And now once again let me impress upon you the importance of having a high ideal of what each face should be. Nearly every face has fairly good features for its type, when analyzed separately, and can be placed in good balance and harmony. Keep an ideal constantly before you and, as the work of correction progresses, the face will begin to assume a strength and beauty you did not think possible when treatment was begun. You will be assisting nature in carrying out her laws, and your results will be as satisfactory to you as they are gratifying to your patients. Do not be influenced by theories that these cases are protrusions. Rely more and more on the upper first molar both in diagnosis and treatment. Study the relation the form and positions of the arches have to facial balance. Understand and appreciate the capabilities of the expansion arch and inter-maxillary anchorage and the treatment of cases of Class II will seem to be, not the bête noir of the past, but simplified to a marked degree and giving you results worthy of your distinguished profession.

THEORIES MADE FACTS.*

BY E. A. BOGUE, M. D., D. D. S., NEW YORK.

During four or five years I have advanced the opinion that the position of the deciduous teeth affects the permanent teeth, and that therefore any irregularities in the deciduous teeth should be corrected in order to prepare the way for the permanent teeth.

If the deciduous teeth are brought to occupy a normal position, the crowns of the underlying permanent teeth will naturally take a correct position and their roots will be formed in harmony.

To illustrate this theory I present three cases, 7, 8 and 10 years of age, which are under treatment, in order to show changes which have taken place within a year. These results have been obtained by means of very simple apparatus. But they are highly instructive to those who are interested in orthodontia.

It should also be added that the effects of such operations reach much farther than would appear at first sight. Indeed, they are almost incredible; and few, if any, and those, mostly physicians, practicing largely among children, have yet begun to realize them.

Four years ago I had the honor of presenting before the Dental and Oral Section of the American Medical Association some observations upon two cases of orthodontia. This paper was discussed by several of the members, who seemed to express doubt as to whether operations in orthodontia performed upon the temporary teeth from 5 years old and upward could be of any permanent benefit, and whether they might not be injurious to the permanent teeth that are at that time in process of formation beneath.

Since then doubt has been expressed as to the utility of moving the deciduous teeth; doubt as to whether such movement could have any effect on the positions of the permanent teeth that are still unerupted.

Your attention is invited to the illustration of a child's skull, not far from normal.

It will be seen that the roots of the molars carry the permanent bicuspid crowns which as yet have no roots, so thoroughly in their grasp that any movement of them would naturally be imparted to the permanent teeth.

---

*Read before the American Dental Society of Europe, August, 1906.

I present now for your consideration three cases taken from among ten that have recently been under treatment, on all of which I placed regulating apparatus in the early part of last year.

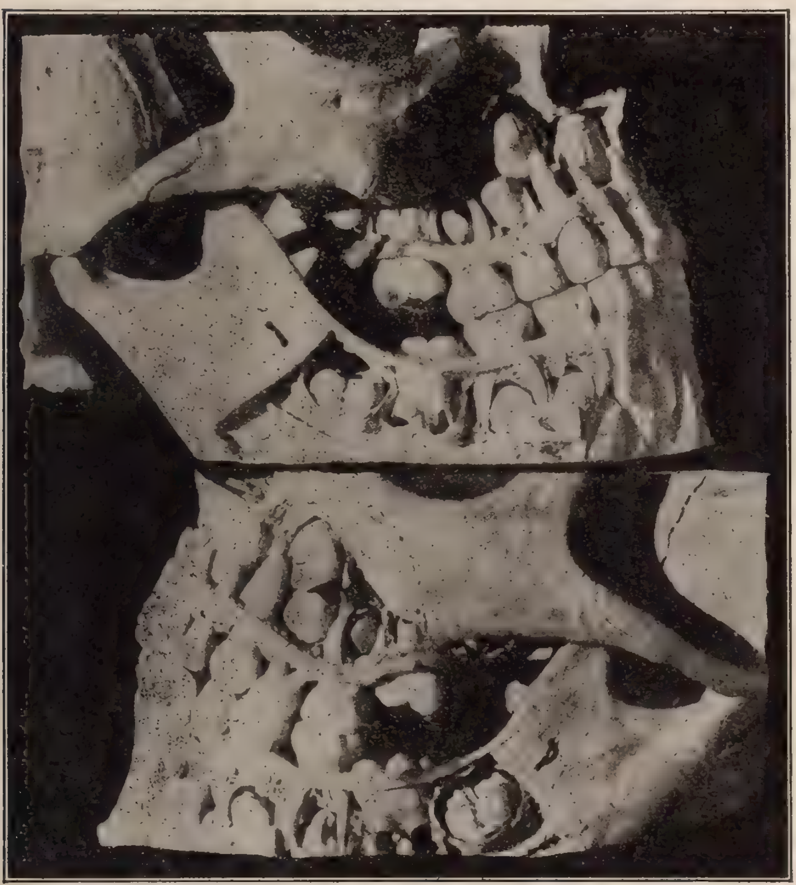


Fig. 1.

I saw none of these cases during a period of four months or more from the time that I finished adjusting my regulating apparatus until they again presented themselves for renewed treatment.

The first that will be presented is Henry M., the younger brother of John and Louise M., whose cases were presented four years ago. As I have just completed the arrangement of fixtures in his mouth to permit of his going to Europe for several months I will describe the procedure from the beginning up to this time.

Figs. 2 A and 2 B represent the mouth at 6 years of age.

The mal-articulation of the temporary molars when closed shows that the permanent molars, if left to themselves, will erupt irregularly while the left upper central incisor just appearing shows that the front permanent teeth are out of place.

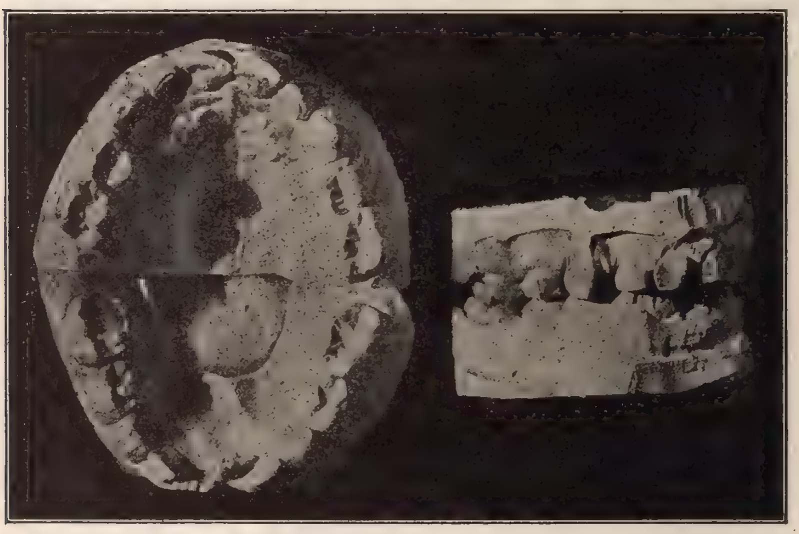


Fig. 2 A. Fig. 2 B.

Figs. 3 A and 3 B show the mouth at 7½ years of age.

The curious feature is here presented of two permanent molars erupted in the upper jaw, while not a trace is to be seen of any permanent molars in the lower jaw.

At the same time the right upper temporary lateral incisor has fallen out prematurely, causing a depression of the arch at that point and a wide separation of the permanent central incisors.

At 8 years of age the Ainsworth fixtures were placed on the temporary teeth to broaden the arches both above and below, to give room for the eruption of the permanent teeth. Attached to the lower molar bands on their lingual sides were two wire springs made after the Jackson pattern with a stronger arch wire passing beneath the tongue to which these wire springs were tied with silk while the bands were being cemented to place.

After the cement was fully set, the silk was cut, releasing the springs, which then pressed forward lightly but continuously on the lingual sides of the lower incisors; and being held downward by some little projecting lugs extending backward from bands cemented to the two lateral incisors, these wire springs could not slide upward on the inclined planes of the incisor teeth, but expended their force in a forward direction moving the teeth gently, but surely to the lines to which these spring wires had been previously bent.

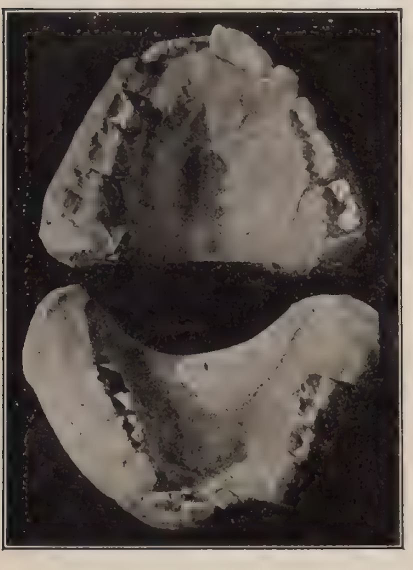


Fig. 3 A.

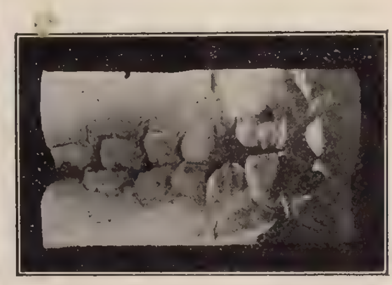


Fig. 3 B.

After some spreading had been done, intermaxillary elastics were applied to act reciprocally, that is to say to draw the upper molars forward while an equal pressure was exerted backward on the lower molars.

While getting the principal molars into proper articulation with each other, care was taken at the same time to advance the upper incisors also until there was room enough between the first permanent molars and the incisors for all the bicuspids and cuspids to erupt easily, and until the lower incisors were formed into an arch, corresponding in shape and size with the arch drawn to his measurements.

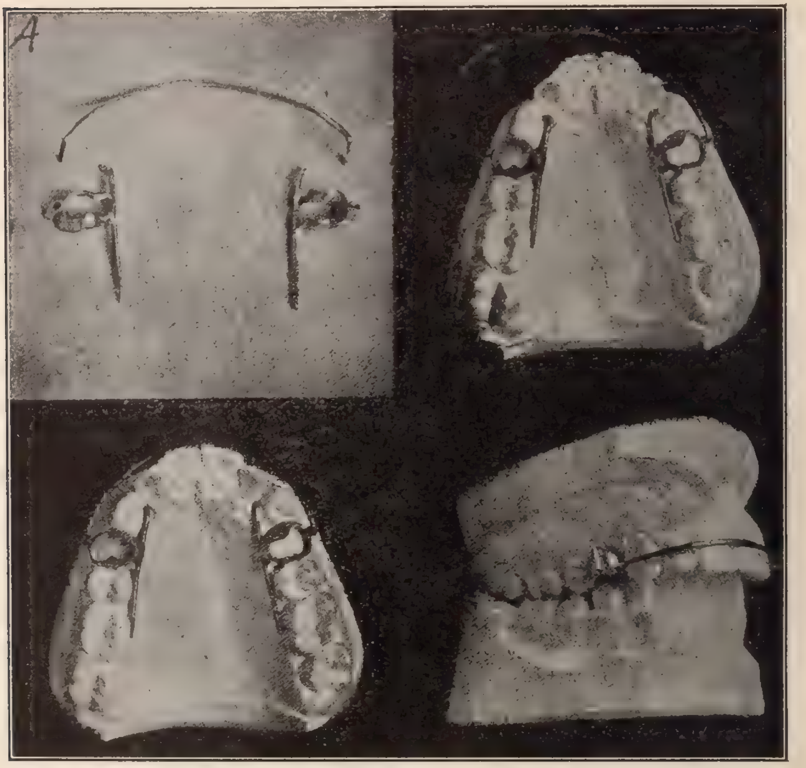


Fig. 4.

At this stage I was notified that the family was to go to Europe to be gone several months, so on April 10, 1906, the conditions were as follows:

See Figs. 6 A and 6 B—showing the models open and closed with the fixtures in place for an absence of several months, if necessary. Patient is at this stage 9 years old.

April 10, 1906: The principal molars have been brought into nearly correct articulation. The arch at that point has been widened

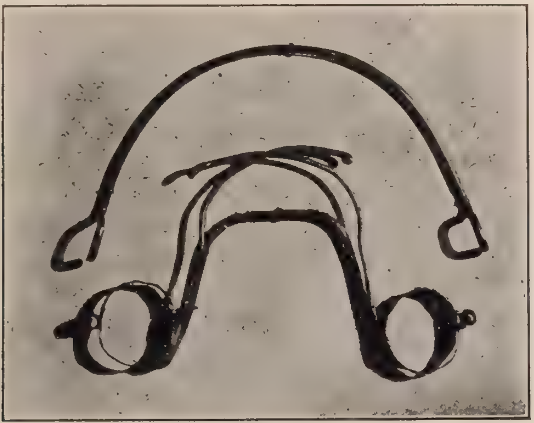


Fig. 5.

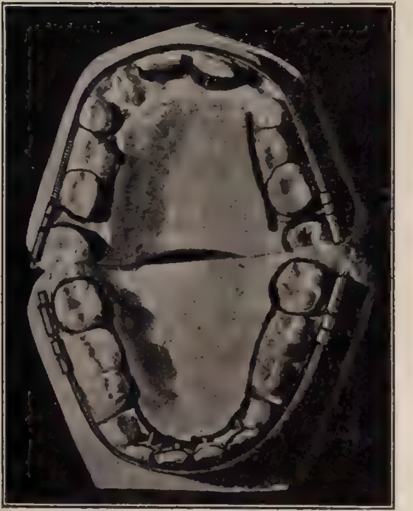


Fig. 6 A.

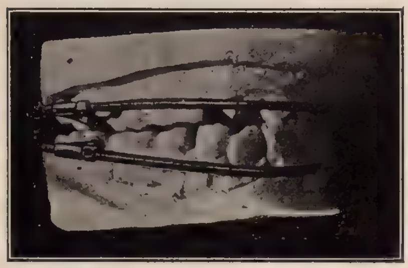


Fig. 6 B.

enough for his present age—9 years. The central incisors above and below have been advanced far enough from the molars to permit of the eruption of all the permanent teeth between them and the principal molars, and are themselves in almost correct position relative to each other. These spaces between the incisors and the permanent molars are maintained by wire arches passing around on the labial sides of the teeth above and below from molar to molar. Bands have been placed on the molars, and horizontal tubes have been attached to these bands to receive the ends of the arches.

The arches have two nuts on each end holding them accurately in place, and also allowing for forward or backward movement in case of future need. The incisors are ligated to the arches by small ligature wires. The second upper temporary molars are banded and have wires soldered to the lingual sides of these molar bands, which extend forward along the gum line, touching all the remaining temporary teeth. On the lower jaw similar wires extend forward from the molar bands, taking the places of the spring wires that served to advance the incisors. These inner wires, shaped as the perfect lower arch should be, are ligated to the outer arch with small ligature wires, for the purpose of drawing the temporary teeth, together with the crowns of the permanent teeth beneath them, into their proper places in the arches.

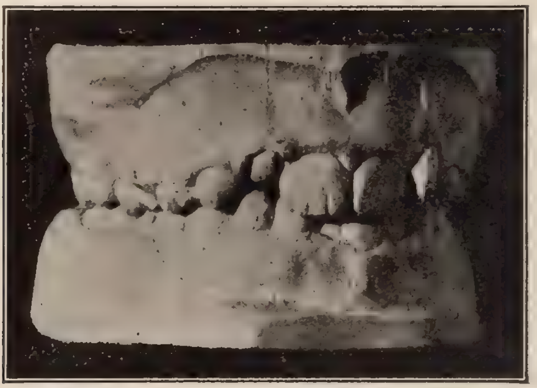


Fig. 7 A.

Just here I will digress to answer the question that arises in the minds of many of the thoughtful students of these questions as to how one may know when the temporary teeth shall have reached their proper places in the arches.

Many years ago Dr. Bonwill discovered that a mathematical relation existed between the width of a permanent central, lateral and cuspid, and the entire arch, and from the measurements of these teeth he was able to construct the entire arch as it should be when normal.

When thus normally arranged it is found that all the teeth growing in one jaw articulate with the teeth of the other jaw so as to furnish the largest area of grinding surface to each other; the cusps and the sides of the cusps, and the sulci into which they fit, all combining to furnish not only the best masticating surfaces, but to form dental arches that for strength and durability can not be equalled. The cusps of all the grinding teeth in such arches interlocking with the cusps and the sulci of their antagonists prevent any variation in position of any of the teeth either laterally or mesio-distally.

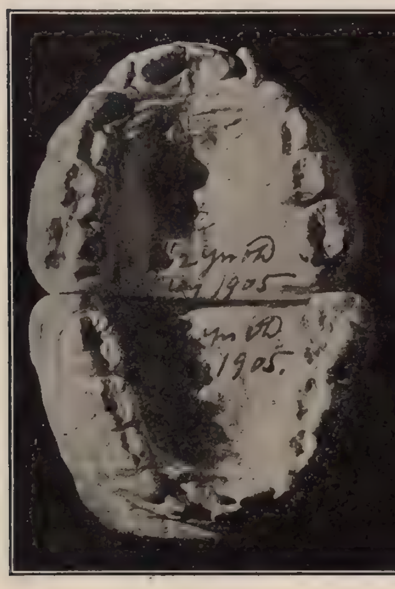


Fig. 7 B.

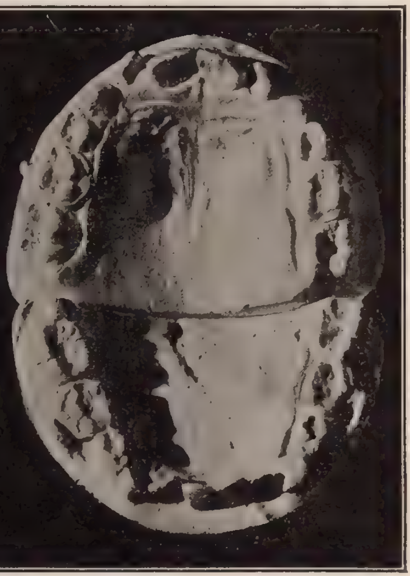


Fig. 7 C.

Dr. Hawley, of Columbus, Ohio, recognizing these facts, adapted this discovery of Dr. Bonwill to the use of the orthodontist, so that today by measuring the width of one upper central incisor or one upper principal molar we may approximate very nearly to the shape and size of the arch in which that tooth belongs, and may draw it upon paper so accurately that we may work to that arch with confidence. If there is any slight variation in the sizes of the various teeth in the same mouth, and we work up to the model, nature will make all proper correction in the way of diminution and adjustment to type without assistance, and at the same time without any injury to size or strength or the adaptation of the arches to each other.

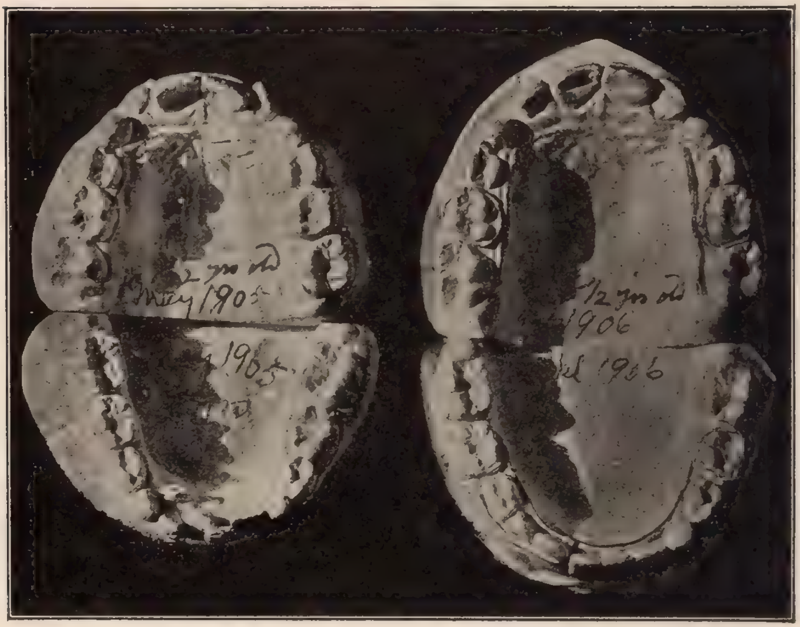


Fig. 8 A. Fig. 8 B.

Now to return: When the *upper* temporary molars in this case fall out, together with the wires that are attached to them, the permanent molars and the central incisors will still be held in their proper relations to each other, and there will be room for the eruption of all the intervening permanent teeth. It will be noticed that the right upper lateral incisor is about one-quarter of an inch back of its normal position, and that it is being drawn forward by a little cap swaged to fit and cemented to the tip of the tooth just appearing through the gum.

It was at this point that the temporary incisor was prematurely lost, causing the saparation of the centrals.

When the *lower* temporary molars fall out the lower lingual wires, being soldered to the bands of the principal molars, are expected to remain, and to continue ligated to the outer wire arch in such manner as to hold the lower incisors forward and in their proper positions while at the same time serving as a partial guide to the erupting permanent bicuspid teeth.

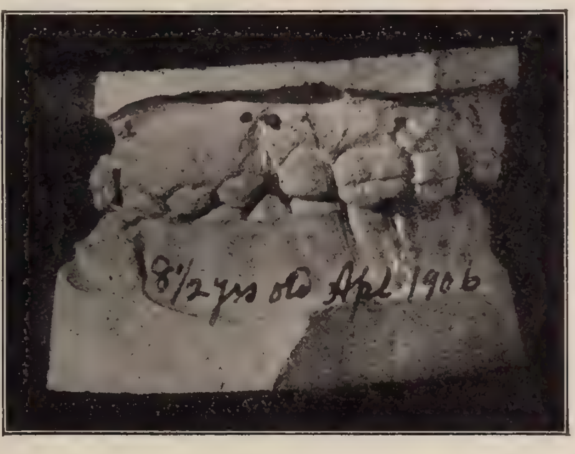


Fig. 8 C.

So when the lower arch of permanent teeth shall have erupted properly into normal positions, if there is room enough for the upper ones to erupt, we may expect the tongue and cheeks to be a sufficient guide to cause them to articulate properly with the lower arch.

The second of the three cases is a little girl, who was 7½ years of age when the apparatus was placed, July 15, 1905. See Figs. 7 A, 7 B.

I did not see the child again until November 11, 1905, when I found the arches in the condition shown in this illustration (Fig. 7 C) having gained in width a little more than one-quarter of an inch.

During the past winter torsion has been applied to the right lower lateral incisor and the two upper laterals. At the present moment the arches are as represented in the illustration (Fig. 8 B), and there is ample room for the eruption of all the remaining permanent teeth when they do come. Fig. 8 A is placed alongside for comparison with the present condition, eleven months later.

The little girl's health has improved markedly during the entire time that the apparatus has been in place. She has increased in weight and strength, and her rosy cheeks and bright manner indicate no sort of ill effects, but on the contrary, great gain. There has been an expansion not only of the dental arches, but of the contiguous parts, upon which health, vigor, clear speech and full breathing so much depend.

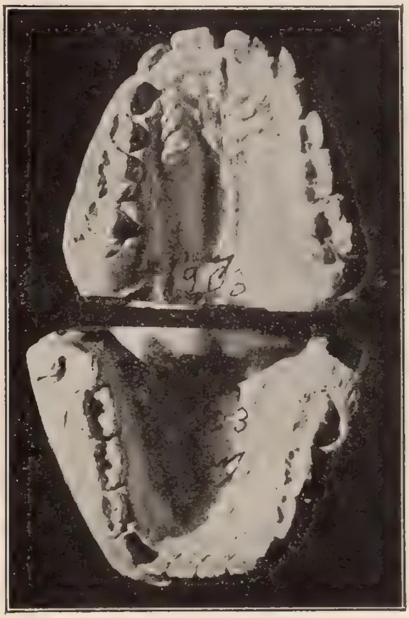


Fig. 9 A.

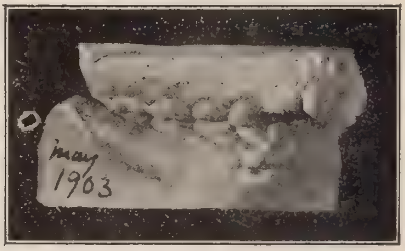


Fig. 9 B.

I now present the models (Figs. 9 A and 9 B) of Miss R. B., 8 years old, the third case upon whose temporary teeth I put fixtures two years later, May 29, 1905, when she was 10 years old. I did not see her again until November 24, 1905, when I took impressions. Fig. 9 C represents the mouth as it was in May when I placed the fixtures; and Fig. 9 D represents it as it was November 24, 1905.

The change in the size of the arches during that time, under the operation of the Ainsworth fixtures like those mentioned in the preceding case, is plain to be seen. The increase in width between the principal molars is three-eighths of an inch, almost one centimeter. On December 7th, these temporary molars became so loose that they had to be removed, taking with them the fixtures which had produced the spreading. (See Fig. 10.)

I was able very soon by means of caps swaged to fit the grinding ends of the upper principal molars, that were only partially through the gum, to get them into proper articulation with the lower molars where they remain.

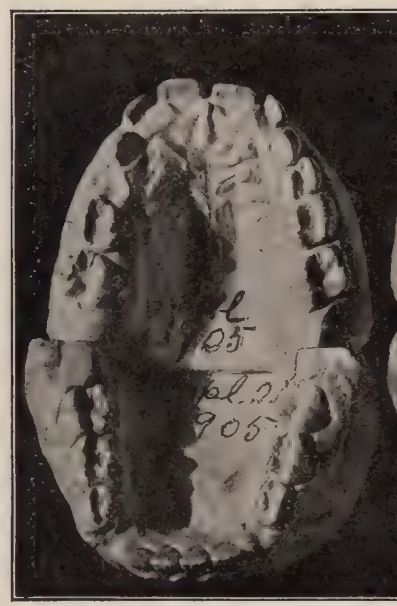


Fig. 9 C.

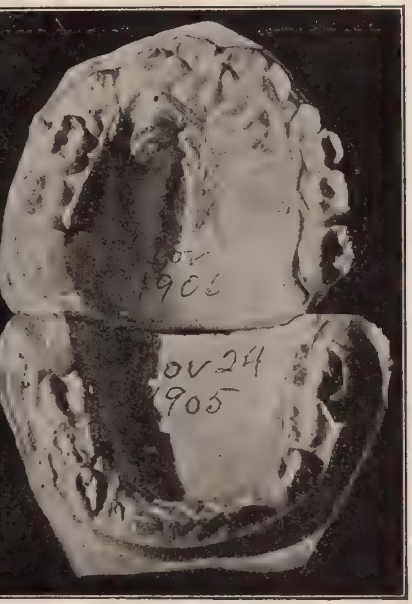


Fig. 9 D.

The incisors are being held forward by arches attached to the principal molars. The permanent teeth are, as may be seen by the illustrations, erupting into the mathematically described arch, into which they ought to come without further assistance, and this arch is one-quarter of an inch wider than the arch of temporary teeth with which we began operations.

The growth and general development in health, appearance and vigor is very noticeable. I have been asked if all the enlargement of these arches is to be attributed to the fixtures, and no allowances to be made for growth.

For reply, I present Figs. 12 A and 12 B, models of the same mouth two years apart, one having been taken in May, 1903, the other in April, 1905; and also Fig. 12 C of the same mouth, November 24, 1905, seven months later than Fig. 12 B.

Fig. 10.

The measuring marks on these models show no perceptible growth in two years, 1903 to 1905, but nearly one centimeter of enlargement in seven months.

Children requiring assistance in the development of their dental arches, require it because of cessation, partial or complete, in their general development, and the irregularities in position of their teeth are but symptoms of a more radical difficulty in their physical condition.

All these three children assure me that they have experienced no pain whatever from the operations.

Let no one suppose that the apparatus, which has produced the effects exhibited this evening, can be carelessly applied and carelessly left for six months, or even six weeks. Just as careful calculation of the force employed, and of the direction in which it should operate, has been made in these cases as was made in working out mathematically the charts which indicate the precise points to which each of the misplaced teeth was to be drawn. In making the lower spring attachments, which later were utilized for the lingual retaining wires, after getting the desired width between the temporary molars, I cut off the incisors and cuspids from the models and replaced them in the advanced positions which they should occupy, and which are a little forward of the normal arch. To these lines I bent my wires which consequently acted just so far and no further.

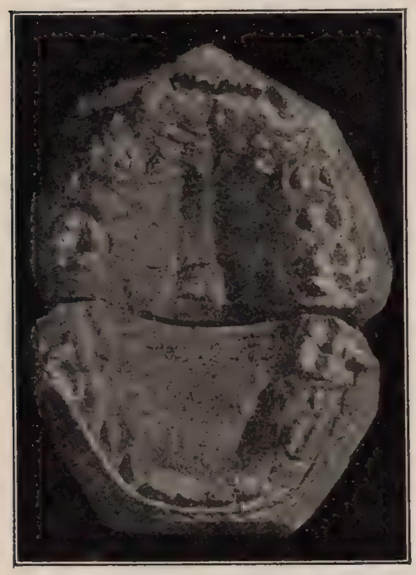


Fig. 11 A.

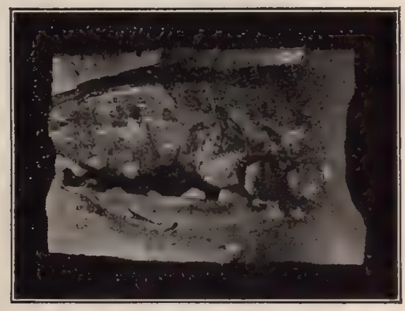


Fig. 11 B.

In other cases I have employed spiral springs around the ends of the arches, ligating with wire the incisor and cuspid teeth to the arches, which had been accurately formed nearly on the same lines used by Dr. Angle. The ends of these arches were screw-cut and nuts were placed upon them just forward of the spiral springs.

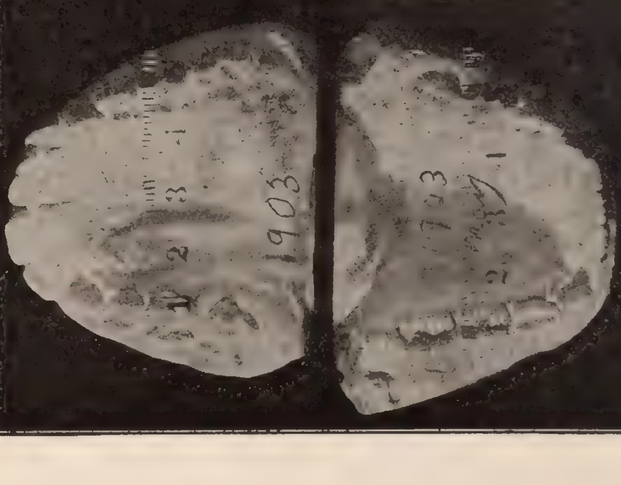


Fig. 12 A.

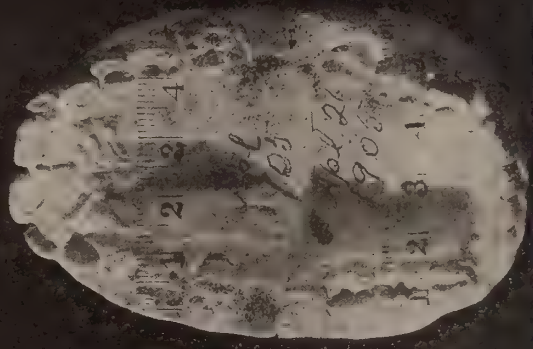


Fig. 12 B.

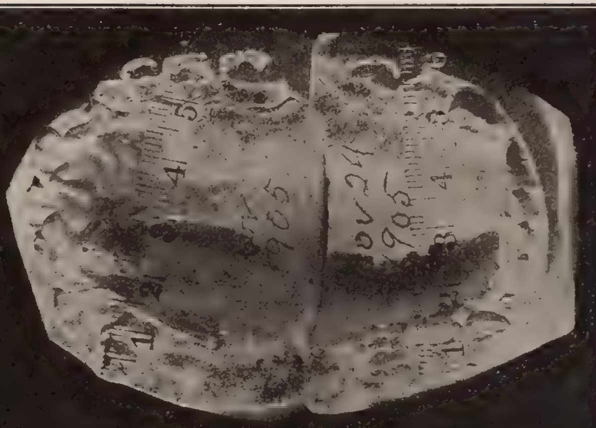


Fig. 12 C.

When the incisor teeth were accurately ligated to the arches, and the ends of the arches were placed in horizontal tubes attached to the anchor teeth, the nuts were turned down against the spiral springs just exactly the distance that the incisor teeth should move forward.

A danger in these long periods of waiting is that the patients may grow careless in the matter of cleansing their teeth, and serious decay may result.

An advantage of these long periods with the apparatus in place is that nature may have time to overtake our corrective operations on the teeth and may advance to even an expansion of all the contiguous bones of the face, and, I believe, of the head as well.

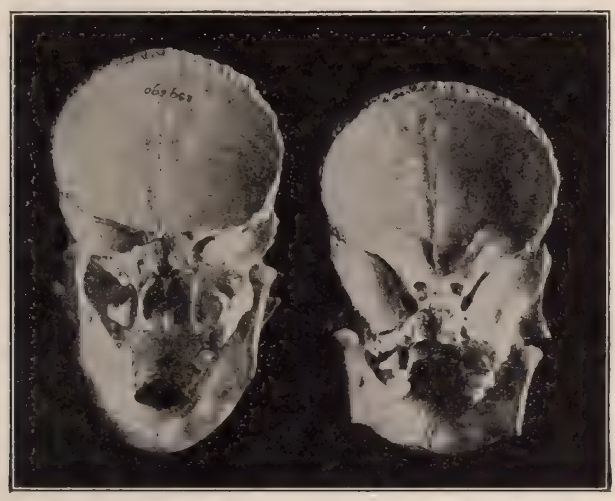


Fig. 13.

The relations of the superior dental arch to the contiguous bones of the head and face are shown in Fig. 13.

Dr. William B. Wood told me lately that he had had one youth upon whose teeth I had placed regulating fixtures last March, under constant observation, so accurately that he had been both measured and weighed every week since I commenced to move his teeth, and that the boy had never ceased to gain both in stature and weight since the day my fixtures were applied.

This boy of 15 was undersized, having ceased for a time to grow, and when after treatment by Dr. Wood he once more began to grow, these regulating fixtures were applied, and his attending physician was naturally anxious to know whether anything was being done that would in any way interfere with the boy's healthy progress toward development, and so fortunately a careful record was kept, without my knowledge, until the operation was completed, of the boy's exact condition from week to week during the whole period of operations.

STATUS OF THE DENTAL PROFESSION WITH REFERENCE TO ORTHODONTIA.

BY B. FRANK GRAY, D. D. S., COLORALO SPRINGS.

The apathy of so many members of the dental profession with reference to certain matters that ought to be of vital interest to them, is so great, viewing conditions as they exist, that I have been led to venture a brief study in keeping with the subject as above.

In studying orthodontia and its relation to dentistry, the writer believes he understands, fairly well at least, the status of the profession in the matter. Before interesting myself particularly in the correction of malocclusion of the teeth, I feel I was disposed to regard conditions of irregularity of these organs of mastication in about the same way as does the average practitioner of dentistry, when indeed it appeals to them seriously at all. Dentists are too prone, in their anxiety to preserve the life and usefulness of the teeth, to overlook, or at best temporize with these deformities.

True enough, caries of the teeth and other pathological conditions found in the mouth, require careful attention, but why will men pass over serious conditions of malocclusion, with scarcely a comment? That this is quite commonly done, need not be questioned. How many communities are there in which the correction of these conditions, and the possibilities attendant upon the work of the skilled orthodontist, is practically unknown to the laity?

I will grant, however, that one of the great hindrances to this work lies in the fact that the man who conducts a busy practice in dentistry, even if he had the ability to do so, could not meet the heavy demands on his time which the proper treatment of any considerable number of cases of malocclusion would impose. The amount of work entailed, and consequent time consumed, in successfully treating a case of any considerable extent, would be a source of much surprise to those unfamiliar with the work. That the requirements of orthodontia are distinctly different from the requirements of general dental practice, needs no refutation, and obviously the best judges of the truthfulness of this statement are those who have a really practical knowledge of the practice of orthodontia, as well as that of dentistry.

The dearth of men competent to treat the various conditions of malocclusion that constantly present, is still a serious problem to the conscientious dentist, who is interested in the welfare of his patients. Fortunately, in a number of our larger cities are to be found orthodontists—many of them broad-minded men of culture, who are devoting all their time and energy to the study and practice of this specialty. The progress being made in this branch of the profession is truly astonishing.

A convert to any worthy system of practice, whether it relate to medicine, dentistry or otherwise, ought not to be sparing in his commendations of his teacher, so that the writer feels most grateful to Dr. Edward H. Angle, whose unremitting efforts have contributed so largely to the advancement of the science of orthodontia. Indeed, his work is a monument to his tireless energy.

The benefits that accrue to the patient from well directed and skilled treatment of malocclusion, are of greater import than may commonly be supposed. In the order of their importance, we may consider these benefits for a moment.

First: Improved Health. We observe many cases in which the extent of malocclusion is a great barrier to the thorough mastication of food: the result is impaired digestion and assimilation, with the ensuing systemic disorders and lowered vitality. In the case of one patient, in the care of the writer, the teeth had but a single point of contact: there was no articulation, not even to mention occlusion. The child had actually been scolded and remonstrated with for insufficiently chewing the food, the parents failing to realize that it was a physical impossibility for the boy to masticate. Under treatment the case is progressing toward a favorable result, the normal occlusion of the teeth being now assured, and after only ten weeks' treatment the patient can use his masticatory apparatus far better than ever before.

Not only is the health impaired because of inability to masticate the food, but in the types of malocclusion associated with rhinological difficulties, where mouth breathing may be a factor in the case, the physical well-being of the patient suffers from the perverted respiratory function. While the rhinologist's services are necessary in such cases, for the removal of nasal obstructions, etc., his work must of necessity be followed by that of the orthodontist, as in some cases the mouth breathing will persist so long as the malocclusion of the teeth is of such a character as to prevent the normal closure of the lips.

Second: Beauty or Comeliness of the Face. The deformity of face resulting from misplaced teeth is truly pitiable to behold, and many there are who suffer the humiliation which is natural to those of a sensitive temperament.

How important it is that men who observe the varying disarrangements of the dental organs, and have to do with their correction, should appreciate the fact that nature was wise enough to give her children just the requisite number of teeth—barring supernumeraries—to meet the best requirements of facial outline, as well as provide, in the best possible manner, for the requirements of mastication! Faces already distorted by irregular teeth, deserve better treatment than has too frequently been accorded them by well-intentioned men who have been too often sadly misguided in their efforts. The normal occlusion of the teeth presupposes the full complement of teeth, so let us not sacrifice any one of them hoping thereby to facilitate our efforts in treatment. The outcome, at best, will be a most questionable one, and there is little credit due the man who temporizes in such matters.

Third: Inhibition of Caries, and Improved Prophylactic Conditions of the Mouth. The conscientious dentist not only aims to restore to normal contour and use, teeth that have suffered the ravages of dental caries, but his efforts are directed toward securing as great a measure of future immunity from dental decay as possible. Irregularly arranged teeth are certainly more apt to be attacked by caries than are those in normal occlusion. The reason is obvious. Nor are malposed teeth so thoroughly compatible with an hygenic condition of the mouth as are normally placed teeth—also for reasons that are evident.

The above facts cover, very briefly, some of the most important reasons why maloccluded teeth ought to be restored to their normal positions in the arch. The average individual, who is in possession of normal health and free from deformity, ordinarily has enough to contend with in this world. If he suffers from ill health, or deformity of face, his existence is apt to be embittered.

The complaint is often heard, that the expense of correcting malocclusion of the teeth precludes the possibility of patients who are in meager circumstances, availing themselves of the services of the orthodontist. It is unfortunate that this is too often true. The work is so exacting upon the time and perseverance of the operator, that he can not well afford to undertake complicated cases without a fair compensation. Possibly, however, the parents of the prospective patient gain the impression that the work may be regarded more in the nature of a luxury than that of a necessity. So long as that conception of it is had many cases will go without attention that might gladly arrange for treatment if the real importance of it were sufficiently understood.

Many people of even moderate means are not very appreciative of things purely aesthetic: the thoroughly practical is all that appeals to them. They are too often so unthinking, or short-sighted, that they fail to weigh such matters broadly and grasp their full importance. When they can be brought to do so, they are more disposed to feel that the payment of a moderate fee for the required services can be arranged in some way.

After all, the whole question resolves itself, to a great extent, into one of education. First, let us have a true appreciation on the part of the dentist, and in so far as he is conscientious he will do his part toward enlightening the public. Once the latter comprehends the necessity of proper treatment of malocclusion of the teeth, it will certainly avail itself of the beneficent results which follow.

ROOT CANALS AS THEY HAVE BEEN FILLED.*

BY C. EDMUND KELLS JR., D. D. S., NEW ORLEANS, LA.

Mr. President and Gentlemen:

The purpose of this paper is to relate the history of the filling of root canals in my own individual practice as recorded in my books, and as the story runs through a number of years, we will divide this period into ancient and modern times, and accordingly begin with—

ANCIENT HISTORY.

In the year of 1878 I completed my four years' course of study, and upon January 1, 1879, it was my good fortune to find myself installed in my father's office, which was then enjoying a practice of over twenty-eight years standing, and bright and early upon that eventful morning I was prepared for the rush—which did not come—for a while.

At the New York College we had been taught, and consequently it was our practice, that when a nerve—it was a *"nerve"* in those days and this is *history*—was accidently exposed and was capable of being extracted by means of a broach, it was good practice to fill the root at once, the theory being that it being a fresh wound at the apex of the root, it would heal by "first intention."

However, under all other conditions, whether the nerve was destroyed or found dead, the roots must then undergo a course of treatment before they should be filled, and if there happened to be an abcess with a fistula (it was such in those days), said fistula should be healed before the root could be filled. These I found were likewise the established rules in my father's office.

Accordingly, when my first case of a devitalized tooth presented on January 11 (same year), I at once commenced the stereotyped form of treatment which consisted of first, cleansing more or less thoroughly the root canal, and secondly, applying some alleged remedial agent upon cotton in the canal, and filling the cavity with cotton, made more or less waterproof by Sandarac varnish. This was repeated from day to day, or several times a week, according as to just how busy I really was or wished to appear to be, until finally, on January 31, the root was filled with gold, and no unpleasant result ensued.

---

*Read before the Chicago-Odontographic Society, September 25, 1906.

And thus for five years was ever my practice conducted. Some times after days and weeks of treatment, teeth which appeared to be cured, only remained in this condition a few hours, when they assumed a sudden state of activity which brought suffering to the patient and trouble to the operator. Usually, after the ordinary palliative treatment, pain subsided and normal conditions would be resumed—but sometimes, seldom it was ture, but yet sometimes, notwithstanding all our efforts, the forceps were resorted to.

A fitting conclusion of this period is exemplified in the specimen exhibited.

A young (?) lady presented upon February 2, 1884, with a devitalized right first upper bicuspid, and after diligent treatment the tooth was finally filled on the 18th. In this case wood and cement were used for filling the root canals, and unfortunately, the patient saw those formidable long, needle-like points, and she immediately complained of feeling them in her "gum." No amount of scientific reasoning of which I was capable convinced her that there was no gum at that point of her anatomy—she felt it in her gum, and that was sufficient. For three days she pestered me with this complaint, continually insisting upon the tooth being extracted. Finally, although there was no inflammation visible, nor any soreness, I concluded there was no alternative and removed it on the 25th, immediately showing it to her *with no wood points protruding.* However, she appeared satisfied, which was decidedly more than I could say for myself.

So this, gentlemen, is a monument to the memory of those "good old times," and with this case we will close our period of Ancient History.

MODERN HISTORY.

The sun rose as usual upon that February morning in 1884, with no indications whatsoever of its being such an eventful day in my professional career.

In the course of the morning a stranger, Cassius M. Richmond by name, appeared upon the scene, and a few seconds after his appearance he was expounding his heretic doctrines. Of course no one credited his ridiculous statements of his achievements and he found difficulty in obtaining an opportunity to demonstrate his fallacious theories. I, for one, would not submit a patient to his unreasonable methods. However, later on one of our confreres concluded to offer up a victim, and several of us were on hand to witness the sacrifice.

Patient—a man about thirty-five, lower molar very sore to the touch, slightly elongated and patient had passed a very unhappy night. Dr. Richmond opened up the tooth, removed the putrescent pulp, cleansed the cavity and pulp canals, filled the canals with carbolized orange wood, and the cavity as usual, but with what material I do not remember. Then he asked the patient how it felt, and much to our surprise, he said, "better." (However, *we* knew that was a misleading feeling which could not prove of long duration.) The doctor then ground down the surface of the molar so that it did not quite occlude with the upper teeth upon closing. After the patient and operator had taken their departure, it was the consensus of opinion among the rest of us that a patient would have a clear case of mal-practice against any dentist who would fill such a tooth in such a manner, and we all greatly deplored the suffering which must inevitably follow.

The next morning the patient appeared by appointment, and greatly to our surprise—I was upon the point of saying disgust—the tooth was all right in every particular, and he had not had a moment's discomfort from it. This was a revelation to me and I did not hesitate to take advantage of it. From that moment the "*treatment*" of putrescent root canals was "ancient history" for me, and not once in these twenty-three years have I had any reason for receding from the stand taken that morning, and therefore is it any wonder that I consider that morning such an eventful one in my career? That object lesson has saved me thousands of hours and allowed me to spend that time in a more profitable manner—has saved my patients thousands of dollars and given them equal results. Cassius M. Richmond had the ability and judgment, talent and genius given to but few, and had he been—but that is a digression. To resume.

A few days later—that is, on February 15—the first opportunity presented for my trying Dr. Richmond's methods, when a young girl presented with a right upper first molar, the buccal roots of which were dead, but palatal root was alive.

The former were duly cleansed, and the fragment of pulp still vital was removed successfully by the Richmond knocking-out process, which, in the meantime, I had seen the doctor perform. The root canals were then sealed at their apices with carbolized orange wood, the balance of the canals and the pulp chamber filled with oxychlorid-of-zinc and the patient discharged. No evil consequences developing its cavities were filled with amalgam on February 18th.

Encouraged by this result, a right upper bicuspid, dead and putrescent, was opened up and filled at the same sitting for the above young lady's sister on February 21—and another sister was so obliging as to present herself with two similar cases which were likewise opened up and completed each at one sitting on February 22 and March 8, respectively. These three cases were all under observation for a little over two years, during which time they remained quiescent, after which the patients were lost sight of.

To be exact and concise, from February 15, the date given for my first immediate root filling up to the end of that year fifty-one teeth with dead or dying pulps in all stages naturally expected to be found, presented themselves in my practice, and they were all filled under Doctor Richmond's plan. Of these two were for transients, and not seen again; four were under observation a few weeks; two for a few months; eleven for one to three years; twelve for three to five years; nine for five to ten years; and eleven for twenty-two years, or, in other words, are still under observation. Not one of these fifty-one teeth were extracted by me, or to my knowledge.

Now, I do not wish it understood that none of these teeth developed any soreness a day or two after they were filled, for some did, but in these instances the same course of treatment was pursued for like cases in olden times, and in every case they yielded, and the teeth were saved.

Later on, when I learned the value of more fully kept records, all such treatments were recorded.

Here is the record of a specimen case. On October 22, 1885, a lady presented complaining of soreness in a lower left second molar. A local application was made, and an appointment given for the 26th. At the appointed time she returned with the tooth in a much worse condition. The dam was applied, when upon the removal of a large gold filling, pus welled up and completely filled the cavity. I called my father to see the tooth and he inquired if I proposed to fill it at once, to which I replied, "certainly," with a good deal more confidence apparent than real. The roots were cleansed and filled, and the operation completed with amalgam. The soreness rapidly disappeared, no bad symptoms exhibited; and up to May, 1890, the tooth remained in good condition, since which date I have not seen the patient.

AND HERE ANOTHER.

A young lady about 20. Lower left lateral sound as a dollar, but very much discolored. Never caused a moment's uneasiness. Opened up. Cleaned and filled. Within three days there developed one of the worst abscesses imaginable, but the patient was tractable, and finally conditions were reduced to normal, and many years after —when last I saw her—the tooth was still in good condition.

A DIFFERENT STORY.

The pulp in a lower second bicuspid died from no apparent cause. The usual operation was performed, which was followed by intense pain, but no swelling. Notwithstanding all my efforts the pain could not be relieved, and though the stage of acute abscess was not reached, I was finally prevailed upon by the patient to extract the tooth. No abnormal condition could be observed at the apex of the root and I was at a loss to account for the disturbance.

Well, things ran along their natural course for a number of years every such case being treated upon the Richmond plan until somewhere about 1898 or 1899 when I awoke to the fact that I had been recently having more trouble with these cases than I was entitled to, and I began to seek the cause. Either I was losing my manipulative ability—which was preposterous at my age, or I was growing more careless—which was impossible, or I had changed some detail in my method of procedure,—which was not,— but come to think of it, I unwittingly had done this very thing.

The fact being that upon the appearance of the Evans Root Dryer it commended itself to me and I began its use. Coincident with its adoption my proportion of roots which developed trouble increased. The moment this was realized I discontinued its use and the ratio dropped again to normal.

Let me describe another one of these typical cases of immediate root filling:

Some months ago my associate, Dr. McAfee, who has recently had the pleasure of meeting the President and some members of this Society, stated to me that he feared his right upper first bicuspid was dying. An examination showed no cause for this, as it had not been disturbed for years, when it had been largely filled with gold by a very able operator, and the fillings were still in very good condition.

Time rolled by, and every week or so he would reaffirm his conviction that from the sensations experienced he still had those fears. Finally he came to me saying that the tooth was very uncomfortable and that he would like me to open it up. This I objected to doing that day, as I was very much pressed for time, and *did not want to open the tooth until I had the necessary time to fill it.* So he worried along for a few days, when I opened up the tooth, removed the putrescent pulp and filled the roots at the same sitting and the tooth at once resumed its normal condition and is still O. K.

Here is another recent episode. A lady patient, whom I had not seen for about two years came in on April 18th last, and I found some little work needed. This was completed, and I wished her a pleasant trip, as she was to leave for Europe in a few days.

On the 21st, three days later, at 7:15 a. m., having just reached my office, she rang me up on the 'phone, and stated that she had passed a sleepless night, and was at that instant suffering greatly. I asked her to come down at once to the office, which she reached at 7:45. The recalcitrant tooth was the right lower second bicuspid which contained a large amalgam filling. Looking up my record I found this had not been inserted by me, consequently I could not tell whether or not the roots had been filled. According to our methods of practice, a skiagraph was then taken. By this time it was eight o'clock, and my appointee for that hour had arrived. Our suffering lady was therefore asked to kindly wait the development of the films, during which time a short operation was performed for the person in the chair.

By 8:30 this patient was disposed of; the films were developed and showed the root of the tooth had not been filled and so we were ready to proceed intelligently. (I will say here, parenthetically, that if the skiagraph had shown the roots *satisfactorily* filled the entire methods of procedure would have been changed—hence the reason for the skiagraph.) By 9:30 o'clock the filling of this tooth, root and all, had been completed, the pain had almost subsided, and the patient was greatly relieved in mind as well, for the ship was sailing in a few days. Upon deciding to read this paper, I wrote to her, asking how the tooth had behaved upon the voyage. Her reply was but recently received and is yet unopened, so I will request of you to open and read it out and we will all hear of the result together.

I appreciate the fact that no object lesson can be learned from a certain operation when the patient for whom it is performed is not to be seen again. One may fill the root of a tooth today and not hearing from the patient again, consider the work to have been satisfactorily done, when as a matter of fact the patient went to the "other fellow" the next day and the tooth was extracted.

For many reasons the personnel of a dental clientele changes considerably in the course of years—especially in the larger cities—and thus it is impossible to keep all of one's work under observation. I will go back haphazard to the year 1894 and 1895 and give you the transcript of the records found during that period:

Total number of cases recorded, 94.

Four cases were for transients and not seen again.

Nine cases were under observation for a few weeks only.

Thirteen cases were under observation less than one year.

Eight cases were under observation between one and three years.

Ten cases were under observation between three and five years.

Fifteen cases were under observation between five and ten years.

Thirty-five cases are still under observation and doing good service.

Now, it just happens that the two periods selected show no extraction, but such are recorded of course at other times—one example having been given you. The four-year record of my associate may prove of interest, he never having practiced "immediate" root filling previous to his coming to me.

Pulps devitalized	128
Pulps putrescent	161
Total	**289**

Trouble ensued in sixteen cases; teeth subsequently extracted, four.

In this connection I would state that the large number recorded of pulps devitalized is due to the fact that he does practically all of the crown and bridge work in the office.

Now, gentlemen, I have taken you into my confidence and given you a transcript from my books. These records prove satisfactorily to my mind that the proportion of successes in the filling of the roots of teeth has been as great under the Richmond Methods, as under the old system of treatment.

Of course I appreciate that the term "success" is merely relative and frequently results obtained by one operator and considered by him satisfactory, might be considered a failure by another. So I have merely given you a statement of the facts in the case, and you are to draw your own conclusions.

I will now briefly state the several stages of the operation as it was performed upon these teeth:

First. When advisable the dam was applied.

Second. The cavities were well opened up, making their root canals as accessible as possible *consistent with preserving the strength of the teeth.*

Third. The cavities proper were cleansed thoroughly with warm water only.

Fourth. The cavities were then flooded with carbolic acid.

Fifth. This was worked into small canals by means of Donaldson smooth bristles, extra fine and for many years made to my special order. By drawing this bristle over a cake of wax a shred of cotton can readily be wound upon it, and this was used to cleanse the root canals, first saturating it with acid, and again using the cotton dry, until finally they were thoroughly cleansed. In larger canals, carbolized orange wood points were used for pumping the acid into the canals.

Sixth. When a sinus obtained the canals and cavity were then filled with carbolic acid, the territory around its opening carefully protected by cotton saturated with alcohol, when by means of soft rubber, pressure was brought upon the acid, and it was usually forced through the diseased tract. This was repeated several times to ensure the entire tract was well cauterized. This detail of course is of recent years only.

Seventh. The root canals were then carefully dried out, and when dry, were filled with oxy-chlorid-of-zinc if deemed advisable, this being my choice of root fillings. If for any reason this was not considered best, whatever appeared to be more desirable, was used. The pulp chamber was always then filled with agate cement, and if amalgam was to be used, and time was at hand, the filling was completed—but if gold was to be used, that part of the operation was usually deferred to another day.

Eighth. And this was a point never overlooked. The occluding surface was shortened a hair's breadth.

Ninth. The gum surrounding the roots was carefully dried, and an application of aconite and iodine was made.

Tenth. The patient was given a small vial of the same with instructions to apply it at stated periods.

Eleventh. If the patient was going away immediately, and could not be seen the following day or if it was an unusually unfavorable case the external alveolar plate was perforated by a new No. 2 round bur driven at a high rate of speed, which operation is nearly painless when expeditiously accomplished. This perforation was made as near the apex of the root as conditions would allow, and a little to one side of the root.

Twelfth. The patient was given positive and vigorous orders to return *at once* upon the appearance of soreness or pain.

Now, then, if the patient did come back, and he did occasionally, the occlusion was immediately looked after, and if wrong, corrected. A leech was then applied in the orthodox manner, and when applied in ample time usually put a quietus upon the trouble. Otherwise a second leech was resorted to or poultices used inside the mouth. When all efforts failed—well, it is needless to state what happened then. The root canals were always filled as found and no attempt was made to enlarge them in any way, the writer being unable in his own estimation to drill or otherwise enlarge those that required it, and those which he fancied he might have enlarged, did not require it.

In closing this history of the filling of root canals, I think I can do no better than to relate a forceful object lesson given me at the period of time just upon the "divide" of "Ancient" and "Modern" times:

On November 21, 1883, (during Ancient times) a beautiful young lady 17 years of age, from one of the Parishes, was referred to me for consultation before she filled an engagement already made with another dentist for the purpose of having the six upper anterior teeth extracted.

Upon examination I found all of these teeth very badly decayed, four of which were abscessed and with fistulas; other teeth were sadly in need of attention, and a lower left first molar had a large abscess and fistula at its roots, and the left upper first bicuspid was broken down beyond redemption.

To make a long story short or as short as consistent with the purpose of this paper, she cancelled her other appointment and placed herself in my hands with the object of saving her teeth and arranged to board in the city for a period of from four to six weeks, which was necessary in order to "treat" the abscesses. Treatment was commenced on the following day, November 22, and diligently conducted upon the accepted plan day after day, until finally, notwithstanding the same, the roots of all these teeth were filled with gold by January 8 of the following year, besides which twenty-seven cavities were filled.

During the twenty-three years (less two months) that have elapsed since the day I first saw this young lady, she has been a constant patient, and this summer I saw these five old time abscessed teeth now working overtime, which is rendered necessary by the breaking down and loss of some of their neighbors, which in those days were in good condition.

On March 3, 1884, four months later and in "Modern" times another young lady, a little younger but not so beautiful, came to the city with almost identical conditions obtaining in her mouth. She possessed six abscesses upon her upper teeth all with fistulous openings, and desired to go back home as soon as possible.

That day one abscessed tooth was taken in hand and completed. The next day two more were begun and finished. The following day still another, and upon the two succeeding days the other two were disposed of. Nineteen other fillings were inserted for her during the next nine days.

In March, 1888, four years later, these teeth were in good condition—after that I lost track of the family.

These two are companion cases; in the one forty-six days of constant attention and the expenditure of hours of time were necessary to cure five teeth; in the other, in five sittings was accomplished twenty per cent more work and the results in both cases were just the same. This being history—comments by myself are not in order.

WHY I MAKE CONTACT POINTS.*

BY DR. W. R. CLACK, CLEAR LAKE, IOWA.

It is not enough that we be clever manipulators of filling material in order to be in fact that which every honest operator aspires to be in name—a skillful dentist.

---

*Read before the Southern Wisconsin Dental Association, May, 1906.

The patient consults the dentist in order to avoid pain or discomfort. If we simply remove the decay and, as our English brethren put it, "Stop the cavity," without restoring such normal conditions as would give comfort to the patient we have stopped far short of our duty. We may make flat seats at right angles to the line of stress and the long axis of the tooth, lingual, buccal and axial walls at right angles to each other, and the gingival seat, occlusal or incisal anchorage, extend for prevention and convenience, in fact make our cavity preparations perfect, we may make therein fillings of gold, amalgam or porcelain that are "poems," but if we neglect to restore normal contact our duty is only half done. There are only two classes of dentists that fail to restore contact where possible: those who are ignorant of the benefits to be derived from such procedure and those who are too lazy or too dishonest to give their patients the best in their power. In discussing a paper on this subject Dr. G. V. Black said, "I think the criticism to the effect that the man who knows this thing and neglects it is not honest to himself, to his patients, to the community which he serves or to his profession, was not too severe." I wish to emphasize this fact, that we have a duty that is above and beyond any money-making, a professional duty that is independent and stands above the mere matter of money-getting in our profession. Let no man think I am lacking in respect for this body of earnest workers who have invited me here tonight nor that I am unmindful of the dignity due our profession, but I would like to tell you a story that I think applies to the class I spoke of who err through ignorance. Many of you whose heads are gray will remember that during the Civil War it was impossible for the government to provide all the comforts of home for the boys at the front. To meet this want Ladies' Aid Societies were organized all over the North to make garments for the comfort of the soldiers. Under the southern sun the rough woolen shirts furnished by Uncle Sam chafed tender skins and the heavy seams gave shelter to other irritants not commonly mentioned in polite society. Some of the boys spoke of these things in letters to their sisters and somehow it got out and immediately thousands of nice cool cotton shirts were made and sent on their errands of mercy. The want was great and the supply of cotton limited so the garments were cut accordingly. One of the boys (I've heard it was Geo. W.

Peck), after trying in vain to make a shirt cover the disputed territory between the bottom of the vest and the top of his trousers is said to have soliloquised as follows:

"Like a man without a wife,
Like a ship without a sail,
But the oddest thing in life,
Is a shirt without a —— proper length."

You may fail to see how this story applies to the subject under consideration, but you will all appreciate the fact that a garment curtailed in the manner indicated would rob the wearer of a great deal of protection and comfort he would have a right to expect from a garment made by loving friends. And yet in my opinion the mistake of the ladies was not productive of as much discomfort as the mistake of the dentist who makes fillings in cavities in the proximal surfaces of the human teeth without making firm contact.

I often see cases in which the impaction of food has wedged the teeth apart sufficiently to destroy normal occlusion, breaking down the gum septum, producing absorption of the process, inducing gingivitis and a host of other evils that come from constant irritation of gum tissue, this in cases where the patient uses his best endeavor to keep these spaces cleansed. Where no attention is paid to cleanliness, decomposition of food takes place, inviting decay of the teeth.

Should we as honest men and conscientious dentists continue these methods? Should we not restore the teeth to their normal mesio-distal diameter and by the use of proper contact points give these teeth greater stability, prevent the passage of food between them, so protecting the gum septum that the interproximal space may be filled with healthy gum tissue? We are taught that decay seldom takes place under *healthy* gum tissue. But there are many cases where the gum has been forced so far away from the gingival ridge that sufficient extension could not be made to place the gingival margin under gum tissue. This would not be a serious matter if the patient were absolutely immune, but there are many cases of exposed cementum when the patient is not immune. In a great majority of these cases properly made contact points will protect the interproximal space so that the gum will be restored to its normal condition and the gingival margins comletely covered with healthy gum tissue. To show you that I am not giving you theory unsupported by evidence, I will call your attention to these illustrations and also pass through the audience a number of plaster of paris casts of conditions which have come under my observation wherein I believe I have accomplished the results spoken of. These casts are attached to cards and numbered; No. 1 illustrating conditions in and around the teeth of these patients when they first consulted me; No. 2, the operations made; No. 3, the results shown after a lapse of time running from a few weeks to years. It has been argued by some that these results will not be permanent.

But you will notice by the dates on which the impressions for these casts were taken that the improvement is progressive and shows every evidence of being permanent. Will not the improved conditions show you why I make contact points?

Without contact points it is impossible to make and preserve the lingual and buccal embrasures into which we invite the excursions of food, so that the margins of our fillings may be constantly cleansed. I believe it is possible by the use of contact points to make and maintain such embrasures that the use of the toothpick will be unnecessary; the contact point so separating the bolus of food that it passes through these embrasures and finds no opportunity for lodgment.

I recall to mind a patient for whom I have made fourteen fillings in the proximal surfaces of the bicuspids and molars, who has absolutely no use for the toothpick. This patient is twenty-two years of age and the number of fillings would indicate the extreme susceptibility to decay. The fillings have been in place from one to five years. Dr. G. V. I. Brown and Dr. C. N. Booth have seen them, the latter several times, and I think they will bear me out in the statement that there is absolutely no sign of recurrence of decay. I believe that not even the hand of a Webb could have made fillings in the proximal surfaces of the teeth of a patient not in robust health and with this extreme susceptibility to dental caries that would have stood six months if the faulty environment had not been corrected and no attempt made to preserve the interproximal space. In this case it was not the man, but the method.

The man who tells you that tobacco preserves the teeth will often tell you that as soon as the period of immunity is reached, the making of contact points is unnecessary. But he, like a great many other investigators, has not carried his observation and research far enough.

It is true that for a few years during immunity from dental caries, it would seem that no amount of neglect or abuse would have any unfavorable effect on the teeth, but recollect that during that period and before the age of from 40 to 45 the teeth from abrasion of the contact points lose about 10 mm. of their total mesio-distal diameter. If we do not restore this in some way, there will be a total loss of contact and a recession of the gum tissue which protects the concavity of the tooth, leaving a nidus in which microbic plaques may attach themselves where without fear of being disturbed they may secrete the acid which will dissolve the lime salts of the tooth. Meanwhile the victim, resting in fancied security, wakes up some morning in a condition of pain which only the forceps can relieve. If you will examine a tooth extracted from the mouth of a man of 40 or upward who has paid little attention to his teeth, in 90 per cent of the cases you will find the conditions I have described. In my opinion, the only way to stop this is like the Irishman's way of stopping a runaway team, "Sure stop them before they get started."

In order that you may more clearly grasp my meaning I will pass some teeth extracted from the mouth of aged patients. The first is that of a confirmed tobacco user and shows you that neither tobacco nor the age of immunity is proof against faulty environment.

The next two are lower molars having perfect contact points on their distal surfaces and no decay on those surfaces. The remainder are nearly all typical cases of teeth of patients 50 or upward from which the contact points have been obliterated by abrasion and all have caries in the concavity. The last one is a particularly interesting specimen. The occlusal third of the mesio-occlusal surface shows a cavity in which the decay has been arrested and a condition of immunity has obtained. There is a beautiful contact point on the distal cusp, but the second molar was evidently mal-posed and the contact instead of coming on the buccal third, has been on the lingual third until abrasion has produced a facet about 3½ mm. linguo-bucally and 2½ mm. occlusal-gingivally, entirely destroying contact.

The concavity of the tooth directly below this facet shows progressive caries. I am of the opinion that if the mesio-distal diameter of this tooth had been restored and proper contact established in time, the gum would have been restored in the inter-proximal space and protected the concavity. That I may prevent this unfortunate condition is one of the reasons why I make contact points.

Having shown you what I consider correct restoration, I will now show you a case where the dentist failed to make contact and let you compare the two methods.

In my opinion, this neglect will result in a food pocket, the still farther shortening of the arch and a more pronounced malocclusion. The filling, so far as it goes, is very artistic, but the operator by failing to restore contact, has (with apologies to the young ladies) made a "Shirt without a —— proper length."

If you should stand by the chair of a dentist who, under all possible circumstances, makes these restorations and hear the words of commendation from grateful patients, you would understand "Why I make contact points."

A METHOD OF ANCHORING BRIDGES BY SWAGED INLAID ABUTMENTS.*

BY JOSEPH W. WASSALL, M. D., D. D. S., CHICAGO, ILL.

That the conventional method of making artificial crowns with bands telescoping over roots or broken-down teeth is unsound practice has long been recognized by both the profession and laity. While under favorable conditions good and safe results are obtainable, insufficiency of coaptation of band edge and tooth cervix is of such frequent occurrence that it constitutes a serious defect and calls for a change of method. It is a fault observed both in the application of crowns to restore lost dental tissue as well as when employed for bridge abutments.

The normal anatomical formation of bicuspids and molars constitutes a natural and the most serious bar to the perfect fitting of a band. An examination of typical tooth forms gives instant conviction of the irrationality and impossibility of attempting accurate and scientific coaptation at the tooth's neck, at once the most important and vulnerable point. It is all too evident that the almost universal custom of procedure is based on wrong mechanical principles and produces unhygienic, unsanitary and disease-engendering conditions.

---

*Read before the Minnesota State Dental Association, June, 1906.

Flagrant violations of all the laws of dental hygienics and mechanics constantly come into our hands as crown work. Not one of you but can recall specimens which you have had occasion to remove which bring the blush of shame for the inefficiency, to use a mild term, of your profession, and the worst offenders are not always men unknown to dental fame. It is a rare thing indeed to find a shell or banded crown with a perfectly fitted joint. This, it is plain, is not so much the fault of the man as of the method. The reasons therefor depend upon the very nature of the anatomical conditions which are present.

What is the history of the shell or banded crown used either as a crown or abutment? Some portion of its border stands away from the cervix, as I have said before—a condition usually impossible to avoid. The gingivitus is there subject to irritation both from the sharp metallic edge and the decomposing secretions or debris lodged beneath it. The free gum margin will, therefore, be irritated and become congested more or less, presenting inflammatory conditions, varying in intensity from slight redness to severe and dangerous purulent pyorrheic inflammation. The subjective effects of such condition may be tenderness or positive pain, tendency to hemorrhage, true pyorrhea, formation of pockets, occasional abscess, etc. In many cases caries of the cervix or crown or root supervenes, encouraged both by the lodgment of debris in the overhang or in the cul de sac, formed by the disintegration and loss of cement from beneath the band. Pulp pain and neuralgia may now be a complication. The situation is aggravated by a growing reluctancy to the use of the brush, or disuse in mastication, followed by a constant increase in severity of all the malign conditions above enumerated. If the progress of such influences it not checked, the tooth is greatly impaired or lost, either from caries, pyorrhoea, or both. This is the true clinical picture presented by a severe case, and it is unfortunately not an uncommon experience. Does not a practice which brings forth such malign results cry out for remedy?

The substitute I have to offer for the old method is a crown inset into the substance of the tooth, the gold margin of which is flush with the tooth's surface.

The method recommended has been in use in my office as routine practice for some time and is a development and outgrowth of the swaged gold inlay method of tooth filling, being a more extended application of gold inlay work. Such a covering seems to furnish a tenaciously adhering attachment even when the natural tooth is much wasted and broken down by caries. Indeed, it is a constant surprise how securely such a covering seats itself and is retained.

There is no longer any necessity of extending the margin of a crown beneath the gum margin of bicuspids and molars. This alone is a great gain in permanency of operation, promoter of hygiene, comfort to the patient during procedures, and ease to the operator. The new crown is in reality an "inlayed" crown, so far as its marginal coaptation is concerned. The continuity between tooth surface and gold crown, i. e., the gold being flush with the tooth surface, without any overlapping gold band, is the ideal condition in all tooth crowns. This is the essential feature of the method. It should be understood that there is also perfect coaptation of metal to tooth over all covered surface.

A great advantage in the method is the opportunity it affords of avoiding destruction of sound tissue. It enables one to construct a partial crown, to restore teeth which are much broken down by allowing the inlaid crown to embrace two or three sides of the tooth only, where by the old method the whole tooth being covered, greater tissue sacrifice was required. This is particularly useful when the bridge abutment is being made.

The technique of the method is as follows:

It may be described under two separate processes, viz., first, the preparation or shaping of the tooth with the taking of impressions, and second, the making of the crown from the impressions in the laboratory. The ultimate setting of the crown needs no description.

In the preparation of the tooth we have to deal with two classes of cases, viz., the tooth which requires a crown for its own conservation, which, of course, presents a tooth greatly impaired by caries, and the case of a molar or bicuspid, which is to be covered to serve as a bridge abutment. The latter we will assume to be perfect, for the sake of description, but this is rarely the fact, for usually fillings more or less extensive are present, which simplify the work.

In the mouths of patients highly susceptible to pain very sensitive teeth may have pulps removed. This, however, is permissible only in matured teeth. Such devitalization is in actual practice rarely required, although quite justifiable when indicated by the conditions.

As the crown is to be made entirely in the laboratory from impressions, the preparation should proceed with the end in view that an impression is to be taken. The tooth is first shortened by removing with engine stones one-third of its occlusal end. Thin disks in the straight hand-piece are now employed, to remove the mesial and distal surfaces, and similar disks and saucer-shaped stones in a right-angled hand-piece are used to reduce the buccal and lingual surfaces, as well as the remaining sharp angles. A sharp shoulder approximately one line in width is left at or near the cervix, preferably just short of it, against which the finished crown is to coapt flush. All sides are to be well beveled or converged to the occlusal end. In cases where extensive loss of tissue has already occurred, the judgment of the operator will retain and properly shape the remaining portions along the lines above set forth. It should be remembered, however, that an astonishing deal of retentive power exists in even slight projections, depressions and irregularities of surface when exactly and closely covered by an accurately fitting cope in the manner to be described later.

If there is, however, presumed to be insufficient anchorage, provision for from one to three posts in the canals may now be provided for.

In the application of this form of crown to bridge attachment, where a sound tooth is to be utilized the entire buccal portion of the tooth, including buccal cusps, is preserved. The preparation is along the following lines: The shortening is confined to the lingual half of the occlusal surface, including the lingual cusps. The surface is ground to a step at right angle to the tooth's long axis. With a small thin wheel a groove is now ground mesio-distally in the center of the occlusal surface one line in depth. This groove is now carried over on to both the mesial and distal surfaces with fissure burs almost to the cervix. Let the lingual surface be now ground away leaving a shoulder near the cervix in the manner before described and extending on to the groove already made on both mesial and distal surfaces. We now have a result which shows a mechanically perfect means of attachment without the objectionable features of the old method of making a so-called open face crown with overlapping margins under the gum and on proximal surfaces.

The next step is the taking of impressions. First, we take an ordinary bite in modeling compound for a guide to occlusion. Second, we take an impression of the prepared tooth, together with adjoining teeth on either side, in a small tray, with modeling compound, as a guide in reproducing contour. Third, an accurate impression in Detroit Perfection Modeling Compound is taken of the entire prepared tooth, from which the model is obtained upon which to make the cope.

The occlusion and contour impressions are obtained in the usual simple manner. The impression for the cast of the prepared tooth must, however, be true and accurate, which is not a difficult matter. An impression cup is made consisting of a copper band very loosely fitted to the tooth to be crowned, the edge being trimmed to conform to the alveolar border. The copper band is made one-quarter of an inch longer than the projecting tooth crown, and is filled with softened Detroit Modeling Compound and pressed over the tooth crown until the edge of the copper ring reaches the gum. Chilled with cold water, it is removed, and if properly done a sharp impression of the entire crown, showing the shoulder, well defined, will be the result.

The three impressions now go into a box with the patient's name and a date of the next appointment marked on the cover. This goes to the laboratory and is there completed, the patient not being seen again until it is to be set, or used for a bridge abutment. It will be evident that much time and inconvenience is saved to the patient by not having the matrix conformed directly to the prepared tooth. The operator also, if a busy man, may delegate this work to laboratory assistance, or do it himself at his greater leisure.

The laboratory process is as follows:

The Detroit Perfection Compound impression is invested in a pad of soft plaster, which is trimmed when partly hard, to a square measuring about one and one-half inches. The redundant compound and plaster is trimmed away so as to more clearly show the margins to which the crown is to curve. The trimmed impression and plaster are rubbed with pure talcum powder, blowing out the surplus.

Ames' Brown Crown and Bridge Cement is slowly and thoroughly mixed to the same consistency as for a filling. The soft putty-like mass of cement is rolled in talcum and pressed over the impression using sufficient force to make it conform to all the inequalities, producing a strong perfect cast of model of the original. The cement covered impression is submerged in cold water and left to thoroughly harden, requiring about twenty minutes. To separate the compound impression and cement model it is well to submerge them for a few minutes in hot water when a knife will very easily pry them apart. The cement model just obtained is invested with plaster in a steel cup called a bed plate, part of the Brewster Inlay Swaging Outfit, the surplus plaster when hard being trimmed off flush with the edge of bed plate; a small piece of wet cotton is placed on the cement model, to remain at least an hour. This is done to satisfy the crystallization requirements of a hydraulic cement, and thereby obtain the maximum strength for model which with ordinary care in working is quite sufficient to withstand the force necessary in getting accurate and certain results.

Either platinum foil 1/1000 inch or gold foil No. 120 may be used for the matrix. I prefer to use the platinum foil, partly swaging it to place over model, using cotton held in a pair of foil carriers. With the cotton in place, the bed plate and foil are placed in the screw press water bag swager and partly swaged to place. The foil is annealed perfectly under a blow pipe and swaged this time without using cotton, the untrimmed foil is again annealed and temporarily put aside. A piece of well annealed virgin platinum plate gauge 38 is swaged and adapted over the same cement model, being particularly careful to have the metal slightly overlap the line the flush or inlayed crown is to cover. The partly swaged foil is again placed on the cement model and finally swaged to place, after which the adapted and trimmed platinum plate is put over the foil and both swaged.

Both foil and plate are removed and flushed between with 22-karat gold solder, the surplus foil being trimmed off. This leaves a perfectly adapted metal cope sufficiently stiffened and rigid to handle in taking the bite for use in building on a tip for occlusion and contour.

This cope will be a perfect fit providing, of course, that everything has been done according to the laws of mechanics.

The bite which is taken is poured in plaster, separated and trimmed; a small piece of softened modeling compound is molded over the metal cope and the bite pressed into it for occlusion, after which characteristic grooves, fissures and cusps are carved. A Mellote's metal die and counter die is made from carved tip, a gold tip swaged, which is waxed to the cope, invested and soldered with 20 k. gold solder which allows for any patching with 18 k. gold solder that may be necessary. The polishing is done in the usual way except for the margins which are worked down to with a fine file to prevent polishing beyond the finished line. Rapidly revolving stones are much more uncertain and harder to control.

To my mind the method suggested is a positive improvement in crowning and bridge attachment methods. It makes for greater perfection and accuracy in dental technique and in so far as it produces results more permanent and hygienic marks an advance in the practice of dental surgery.

PRESIDENT'S ADDRESS.*

BY DR. T. H. DALY, MT. CARMEL, ILL.

Mr. Chairman and Fellow Practitioners: It is a great pleasure to me to be here today as president of this society, to think of the good that this society has done, and the unlimited opportunity we have before us in making dentistry and dentists of this section better, and placing our profession in the position that it deserves.

Thus far we can say our society has been a success and we have been benefited in many ways. It is, sometimes, not easy to measure the good we derive from these meetings, but if we attend with the right spirit, if our minds are not prejudiced, and if we put our hearts in this work, we are sure to profit by them, and if we only receive one new idea at each meeting, we shall have enough to repay us for attending. At least we shall have more than those who stay at home.

We spend years in school, acquiring the technique of our work, and may think that when we are through school our duty to everyone concerned has been fulfilled, but this is not so. We need every agency to assist us in our actual work and in protecting the public from all methods and practices that are injurious. We must have an ambition to excel, to do each succeeding operation better than the last; to treat each new patient with a little more consideration and kindness than the last, and to treat our fellow dentists with a spirit of good-fellowship. No other agent will assist us to reach this ideal condition like attendance at these meetings, and he who denies himself these stimulating influences of progress, is short sighted, and wasteful of his opportunities.

---

*Read before the Wabash River Section of the Illinois Dental Society, October, 1906.

In the past, attending dental meetings in this part of the state was not easy, there being few easy of access. But since these district societies have been organized, there is no reason why every dentist should not attend the meetings.

It has been said to me, that much more can be seen and heard at the larger meetings. This cannot well be denied. So much the better if we can attend the larger meetings. But this ought not to detract in any way from attending our district meetings. Is it not a fact that here we come in closer contact with our neighboring dentists and come to a closer realization of their successes and failures?

Some of us are new men. We lack the experience and the original ideas that come to the older ones. This then is the opportunity for us to get the ideas that we need, while the older men come in contact with those just from college, who are using the latest methods of the profession. Thus both older and younger members are benefited.

The locality in which we are will bring similar requirements to us all. Our practices are necessarily similar and this brings us into closer relationship and gives opportunities for discussions and questions that we probably should not have in the larger societies. Here we are at home. In the larger society we find a hesitancy in "speaking up in meeting" that we do not have to think of here.

Not only do the ideas and methods which we acquire, benefit us, but the class of work done in a certain district, the methods of doing it, and the fees obtained should present a similarity. The fact that one dentist advises a crown while another advises extraction and many other similar cases, has a tendency to make the public afraid and a loss of confidence in dental operations is the result. Where two or more dentists advise the same thing, the opposite effect is felt, viz., increased confidence and a much easier time for the dentist who performs the operation. I realize that this is a very difficult phase of our work to make ideal, but much good can be done at our district meetings.

You are all familiar with the successful reorganization of our State society. You are also aware of the brilliant starting of nearly all of the local societies. The tendency to keep up this record must be carefully watched. No enthusiasm can be lost, for we need it all, if our meetings are to continue successful. So far, I think I can say that the Wabash River Section Society has done well. Our attendance has been very fair, our papers and clinics have been good, and I think you will all agree with me when I say that the greater part of our success has been due to our program committee, and especially to the chairman. You who have not been on this committee, have no idea what they are compelled to do, and the disappointments experienced. Throughout all of this the committee has labored with so much success and enthusiasm that they deserve appreciation.

I have two final suggestions that I desire to submit for your consideration, that may lighten the work of the program committee if they were adopted. First, to give this committee the power to assign certain subjects and require the members to be prepared, whether the subject be a paper or a clinic. This would not necessarily be harsh treatment and would always assure us of a good program; second, to take up some one subject for a whole session. For instance, gold fillings. One paper might be on cavity preparation, another, on the manipulation of the gold, another phase of the same subject might be a clinic on gold inlays, and so on.

This would give each member the opportunity of knowing what the program would be, and he would have sufficient time to study and think on the subject so that he could enter into the discussion intelligently and without embarrassment.

Now, to close, I should like to touch upon three points. First, attend every meeting. Second, take part in the program when you are asked. Do this willingly. Do it from a sense of duty, for the good it may do yourself and the society as a whole. Do not make the work of the program committee double or treble by waiting to be urged, or worse, by indifference. And third, try to get every man in your territory to become a member. If he is not eligible, use your influence to make him so—get him interested. If these things are done, our success as a society shall be great, and as individuals, we shall receive inestimable good.

WHAT CONSTITUTES SUCCESS IN DENTAL PRACTICE.*

BY F. E. CHEESEMAN, D. D. S., CHICAGO, ILL.

Is it the mere ability to perform perfect operations or to accumulate money? To my mind, it is not. By this I do not imply that these are not most desirable attainments, but that they do not by any means form the largest element in a successful dental practice. One may be able to perform brilliant operations, and yet fail to give the best service to his patients.

One of the most essential requirements is judgment as to what manner of an operation to perform in each case presented. Whether it is advisable to perform as nearly as possible a permanent operation, or to temporize with the use of some plastic material on account of the youth of the patient, or of a low physical condition. Perhaps the sense of fear may be so great that it will be impracticable to perform a permanent operation at that time; but after temporizing we may grow into such accord with our patients that they will allow us to perform operations that would not have been tolerated at the earlier period. The ability to thus discriminate enters most largely into a successful practice. The young dentist who will adopt this line of procedure will ultimately reap the reward of a good practice, because he has manifested the moral courage and honesty to do the best for his patient irrespective of the fee. It is the habits we form during the first years of our practice which enter largely into our later work. If we disregard the best interests of our patients by doing an extensive piece of work when a simpler operation would have answered the same, and oftentimes a better purpose, we are liable to form the habit and acquire an unenviable reputation in this regard. The greatest mechanics, "and after all our work is principally mechanical," are those who do their work in the simplest manner, and we should receive a fee commensurate with the amount of good we have accomplished for our patient rather than for an elaborate display of metal when it was not indicated.

---

*President's Address, read before the Northern Illinois Dental Society, Aurora, October, 1906.

One of the greatest detriments to a successful practice is the adoption of fads and not being able to drop them when they are contraindicated. I think that the great majority of us are liable to become enthusiastic over some form of procedure, especially if it appeals to us personally, and we seem to have success in its practice. However, this class of men appeal to me much more than the ultraconservative, who will not try anything new until it has been demonstrated to be a success, and who are then far behind the procession, because it has not been by the efforts of this latter class, but rather by those of the former, that dentistry has reached the high plane in science and the arts that it occupies today. We should give each new method its place in our practice, if it demonstrates that it has one. We should not abandon old and tried methods until we can absolutely demonstrate in actual practice that in our hands the new method is at last as successful as the old.

The discrimination by which we are able to gather that which is useful, and cull out that which would be harmful to our work, enters as an element into a successful practice. Habits of personal neatness and cleanliness, both physically and morally, made evident to our patients is a very necessary attribute; also an orderly and unobtrusive arrangement of instruments. It is a good plan to display as few evidences of our calling as is possible, until required to do so by the exigencies of the operation at hand. Another requisite is to promptly meet appointments and insist upon the same consideration from our patients. A cultivation of this habit will be greatly appreciated by those of our patients whose time is valuable. But if we insist upon a fee for lost time, we should be willing to make concessions in the same manner, when we disappoint our patients. Such a rule working both ways would appeal to most business men, and would result in fewer broken appointments and loss of time for the dentist and his patient.

A genuine, although unobtrusive, interest in the welfare of the patient enters largely into practice building. The mere fact that our patients consult us is at least an evidence of their appreciation of our skill, either through their own knowledge or from the recommendation of others. For this reason, we should feel complimented and should show our appreciation by the greatest care and skill. In this age of dentistry, when there are so many practitioners doing beautiful work, it is indeed a compliment to have a cultured family placed under our care, and we should repay this confidence by careful attention to each member of the family, striving to our utmost ability to meet their needs in a skilful and conscientious manner.

The dentist who feels and can convey the impression to his patients that he takes a personal interest in their welfare, is one who will make many friends, and as a consequence many desirable patients. This one may not have the mechanical skill of some of his confrères, but his tact and personality will win for him a large practice, especially if he is striving to do the best he can, as far as his ability goes.

Another important factor is the ability to impress patients with the fact that when we have decided upon a certain course, we have confidence in our ability to perform the operation, and that there is no doubt as to what should be done. This results in a corresponding confidence in their own mind as to our ability and judgment, and they are not so liable to hamper and annoy us with foolish suggestions of their own. If necessary to explain to them what is about to be done, we should do so in the simplest language and without hesitation, so that they are impressed with the fact that we have decided upon a definite course of action.

A lack of confidence in handling instruments which some dentists seem to possess, is a habit unfortunately which our patients are liable to criticize. One of the greatest compliments I ever received was from a patient who said, "Doctor, I like the confident way in which you handle instruments. You seem to know just what instrument you wish to use." He went on to say, "I once went to a dentist who would pick up an instrument, look at it from all sides, lay it down, then pick up another, and he did not seem to know whether or not it would meet his requirements. As a result, I lost confidence in his ability and changed dentist." There is no doubt that while we are busily at work, our patients are "sizing us up," as the vernacular goes. If favorably, they return for future services, and send their friends. If unfavorably, we see them no more, in a professional way. Therefore, we should cultivate the habit of manifesting confidence in ourselves while doing our work, never allowing the patient to dictate a policy that we feel to be wrong or that will result disastrously to the operation. It is better to lose our patient by firmness in this regard and keep our self-respect than to lose them because of an unsuccessful operation. We always receive the censure, although they have dictated the policy.

As to the accumulation of money, very few dentists can hope for more than a modest competence as a provision against the time when no longer able to practice. Indeed, some of our most eminent men, those who had devoted their lives to the elevation of the profession, and who were busy practitioners, were almost objects of charity during their latter days. Who is at fault for this condition of affairs, the dentist or his patients? Seemingly a large majority of our patients do not, as a rule, appreciate the real value of the services the dentist has rendered them. But this is the result of a long line of bad precedent as to fees by our predecessors, together with the methods of the advertising dentists in the larger cities. One of our most distinguished practitioners told me that as a young man he did himself incalculable injury by accepting as a standard of fees those of his professors in operative and mechanical dentistry. Both of these men were eminent in practice and reputation, but were doing these operations for a much less sum than they were worth, and could have received, had they asked for it. The result was that for quite a few years he deprived himself of a great deal of money he could have acquired, and after he did realize his mistake, he often had much difficulty in convincing his patients that he should receive larger fees. First-class dental services are worthy of a fee that will allow us a good living and an opportunity to save something each year. But if we expect to convince our patients that we are entitled to a good fee, we must believe it ourselves, and have the moral courage to ask for it. Certainly, we need not expect our patients to suggest that we are not charging them a sufficient sum.

The following are a few suggestions which seem to me to tend toward success in practice. The successful practitioner is one who prepares a cavity for cement or amalgam with the same care that he would for a gold filling or an inlay, and who subsequently polishes that filling. One who removes the enamel from the crown and roots of a tooth that is to act as an abutment for a bridge; one who prepares this tooth so that the circumference will be slightly less at the occlusal surface than at the gingival line, and who fits the band so that it hugs the tooth at the gingivae, and does not extend so far below as to impinge upon the peridental membrane, one who always adjusts the rubber dam in treating teeth; one who polishes fillings so that there shall be no excess of material to irritate the tissues and form a lodging place for food tending to subsequent decay at this point.

One who does not make use of baked porcelain bridges unless conditions are extremely favorable as to shortness of span and length of bite to allow for sufficient bulk of porcelain to withstand masticatory stress. I can speak feelingly on this point.

One who does all that is possible to prevent a display of metal of any kind, and in this age of porcelain art it is unnecessary in almost all cases. One who does not use a tooth as an anchor for a clasp plate without previously crowning that tooth with porcelain or gold. One who does not use somebody's embalming fluid or somebody else's abscess cure, warranted to heal anything from necrosed bone to housemaid's knee, and which obviates any necessity for removing the pulp or filling the roots. One, who does not use open-faced crowns to act as abutments in bridge cases. One who does not form the pernicious habit of doing little things for patients without charging a fee. This habit grows so that a formidable percentage of time may be used daily without any pecuniary reward.

One who promptly mails statements the first of each month, the same as does any mercantile house. Laxness in this respect costs dentists thousands of dollars each year. Dental work is never so satisfactory to the patient as when it has been paid for and the account balanced. One who requires the assistant, if he employs one, to thoroughly disinfect the instruments after each operation, and arrange the table and cabinet so that the next patient can see no evidence of what has been done previously. One who is charitable in dealing with the mistakes of his fellow practitioners, for in all probability he needs a great deal of it himself. These are a few thoughts that occur to me that should help greatly in the building and maintaining of a dental practice. With these we must possess ability, honesty of purpose and a personality that will please rather than repel. Most of these attributes can be cultivated even though we do not possess them at first. If we can point to a record of always having tried to do the best for our patients, though we may have had many failures, if we have the confidence and respect of a majority of our patients; if we have not ridden hobbies to death, but have practiced in the broadest sense keeping up with the new ideas and gathering those that are helpful and rejecting those that are tried and found wanting, there is no doubt that in the evening of life our friends can say of us, "He has been a successful practitioner."

PROCEEDINGS OF SOCIETIES.

THE AMERICAN DENTAL SOCIETY, OF EUROPE, MEETING AT BERLIN, AUGUST, 1906.

DISCUSSION OF THE PAPERS OF DRS. LAW, BOGUE AND HAWLEY.

The discussion was taken on all three papers and was opened by **Dr. R. D. McBride**, who said the title of Dr. Hawley's paper was one that appealed to the progressive mind, for accuracy was the chief element of success in the scientific world, and the method which he had worked out with such delicate precision for the construction of a perfect dental arch in orthodontia, independent of the position, shape, or size of the teeth, was highly commendable. The fact that it was founded upon a mathematical basis which was in accordance with the natural laws of physical development made this method an unerring standard whereby it was possible to produce results in orthodontia which from the standpoint of accuracy were beyond question or criticism. By the intelligent use of Dr. Hawley's method of determining the shape of the dental arch one had the assurance that one was right, which always developed strength and self confidence. The general adaptability of this method in diagnosis and by way of study and comparison during the various stages of completion of the work greatly assisted in solving many perplexing problems. As Dr. Hawley had pointed out, by the use of the chart showing the true shape of the normal arch for any given case, it was possible to determine instantly and definitely just what change must be made in the position of the teeth, and how the change in the position of the teeth would affect the facial expression. He desired to emphasize what Dr. Hawley had said on that point, for it was a question of importance to determine exactly and mathematically just what change the treatment will make in the facial lines. Since Dr. Bunker had had charge of the department of orthodontia in his (Dr. McBride's) practice that method had been used exclusively in the treatment of all cases. Dr. Hawley's work on the subject had laid the foundation for research which would throw light on many subjects which were at present not clearly understood. While Dr. Hawley had worked out this mathematical method of determining the normal shape of the dental arches of any given case for the express purpose of facilitating accuracy in the arrangement of the teeth in orthodontia, the thought had presented itself that his charts could be used to advantage in the construction of artificial dentures. Dr. Bonwill's arch, based upon the equilateral triangle, conformed approximately to the perfect dental arch, but by the application of his principles there was no intimation or guide, other than the exercise of good judgment, as to the size of teeth to be used in any specific case and he saw no reasons why those charts could not be employed with advantage in prosthetic work. No department of dentistry had made such rapid advancement during the past few years as orthodontia. The introduction of normal occlusion laid the foundation of the science, the application of the intermaxillary ligature for shifting the arches mesio-distally was the next step of importance, and Dr. Hawley's accurate method of determining the shape and size of the dental arches must take rank as the most recent achievement in the science of orthodontia.

Dr. Hawley in his application of the transparent celluloid chart (Fig. 7), called attention correctly to the small amount of expansion necessary in the lower, as compared with the upper, jaw, and attributed the cause of this condition to the fact that the narrowness of the upper jaw has forced the lower jaw backward, making it seek a distal position in order to obtain a comfortable occlusion. Those conditions he intimated carried back the condyles to an abnormal position in the glenoid fossa. Though this special question was foreign to the subject which Dr. Hawley had presented to the Society he did not believe it possible to carry the condyles back to an abnormal position in the glenoid fossa. When they occupied their normal position in the glenoid fossa they were as far back as it was possible to carry or force them. When the lower jaw was brought forward in order to corect certain classes of malocclusion the condyles occupied an abnormal anatomical position, which position, if the jaw was held in its forward position, could be permanently maintained, and in time, he believed, become normal.

DR. GEORGE NORTHCROFT

Suggested that an opinion should be expressed on the vexed question of whether in cases of occlusion it was the lower jaw which was moved forward or the teeth in the lower jaw, because it seemed to him nobody was clear as to what really happened. It appeared in some cases as if it must be the lower jaw itself which bodily moved forward, the condyle moving forward in the glenoid fossa, while in other cases it appeared almost impossible that such a condition could exist without the jaw slipping back into its old position, which was known not to be so.

DR. MCBRIDE

Said a number of years ago he had the pleasure of presenting to the Society a paper on jumping the bite, in which the question was discussed quite freely. Since then he had been making more or less close observations, and he practically entertained many of the same ideas today as when he read the paper. When the lower jaw was brought forward and the condyles rested upon the eminence in the glenoid cavity, whether that jaw remained in that position or not depended upon the permanency with which it was held, age of the patient and the form of the glenoid cavity. In cases where the molars and bicuspids had not been loosened to any extent during the treatment and the lower jaw was brought forward and a retainer employed that would constantly retain the condyles on the articular eminence and not allow them to comfortably resume their former position in the glenoid cavity he believed there was something that took place in the cavity which prevented the lower jaw from taking its former backward position. But in cases where the teeth had been loosened as in many second-class cases where the bicuspids and molars had been elongated in order to establish a normal plane of occlusion and the jaw retained in a forward position the action of the muscles would carry the jaw and teeth back, both upper and lower, until the condyles occupied their former backward position in the glenoid fossa.

A Member

Asked Dr. McBride to give the approximate time in which to retain a case of the kind where a jaw in a middle aged person had been brought forward.

Dr. McBride

Said that was a point that could not be definitely answered. When such treatment was necessary the younger the patient the better were the chances of success.

Dr. Davis

Said the statement made by Dr. Hawley in regard to the first permanent molar always being present when the incisors erupted led him to speak of a case in which the molars were not present when the incisors erupted. One of the first molars appeared at the age of nine and the other three molars had not erupted up to that time, although it could be seen they were in position by the swollen condition of the gums. In that case the lower incisors had grown so long that they penetrated into the gums at the back of the upper incisors and had forced the upper incisors almost to a horizontal position. All the permanent molars were in perfect condition, as were the permanent cuspids, and it was a question what to do to allow the three first permanent molars to erupt, as there was no room. Gold crowns were made for all the temporary molars in order to open the bite sufficiently to give room for the molars to reach their proper length and the bite was opened so that when the lower jaw was protruded it allowed the edges of the lower incisors to come against the edges of the upper incisors so that the incisors would not elongate while the jaw was held open with the crowns on the temporary molars. The stress upon the temporary molars caused a rapid absorption of the roots and the bicuspids began to erupt very rapidly causing the temporary molars to become loose, and it seemed as if the temporary molars with the crowns would come out before the first permanent molars erupted. Fortunately, however, two of the molars erupted before any of the temporary molars fell out and he was able to put crowns upon the first permanent molars which gave a chance for the bicuspids to erupt. He still retained the open bite until the bicuspids erupted and came in occlusion, and then he took off the crowns of the permanent molars and gave them a chance to erupt. Meanwhile a little band placed around the front teeth drew in the protruding upper incisors. With no retaining appliances at all they retained their position, he presumed by the lips. The mouth was brought into a normal condition and the occlusion of the temporary teeth was perfect.

Dr. W. G. Law

Said that although Dr. Bogue used methods slightly different from those employed by other operators the results here were much the same. He wished to emphasize the point made with regard to keeping close watch of the physical conditions of the patient. In nearly every case if the patient was in good condition there was very little annoyance and no retrogression. Recently he had a case, a young boy, of Class II, first division, where the occlusion was so bad that mastication was very poor. The boy had adenoids, which were removed before the treatment for correcting the mal-occlusion was begun, and during the seven weeks he was working on the case the boy gained seven pounds, and there was an entire change in the face both in expression and color.

The results at which Dr. Hawley had arrived were fine, and of scientific value. Dr. Hawley did not say that the upper molar was normal mesio-distally in most cases, however. If he did so his method would be perfect.

He believed that if the basis of diagnosis is the upper first molar, if the arches are made the proper width, they will closely follow these diagrams.

The question of bringing forward the lower arch and jaw is one which demands a great deal of attention. In all cases of Class II he believed the upper jaw became narrow after the lower jaw had stopped its forward development. By allowing the muscles attached to the upper jaw to be put on a tension we find as a result that the upper arch narrows—the tongue pressure also being removed from the upper teeth. The lower jaw did not go backward because the upper arch becomes narrow, but the upper arch became narrow because the lower jaw was dropped and its forward development stopped. He did not believe the condyles were forced backward, but there was a force changing the lower jaw at the ramus. In nearly every case of Class II after correction, if the correction had been made without changing the position of the condyles, the angle of the jaw had been changed; in fact, the bone had been bent. It was difficult perhaps to believe, but it was nevertheless a fact. In young patients this was easy to accomplish. The older the patient the denser the bone would be and the accomplishment of a change in the formation of the bone would be more difficult, but in the vast majority of cases it was possible to change the shape of the lower jaw so that when the occlusion was normal it was impossible to bite back to a distal position. The natural tendency was, of course, for the jaw to return to its old form and there was great necessity of having a sufficiently strong retention.

In a great many cases, especially in older patients, there was great difficulty in establishing nasal breathing on account of the contraction of the nasal cavity. In cases of nasal troubles he had been told by a celebrated rhinologist that in some cases it was with great difficulty he brought to a healthy condition the nasal passages on account of constant mouth breathing, and he thought it would be a great help to enlarge the arches, but that if the cases were allowed to go too long, the probabilities were that the bone became so firm that the expansion of the arches would not be enough to allow the nasal passages to enlarge, and in those cases artificial means had to be used such as a mechanical nasal expander, and the patient had to undergo a long series of what might be called nasal gymnastics. He further said that it would be of the greatest value to him if cases immediately upon operation could be placed in the hands of a dentist who could expand the arches and place the teeth in their normal positions and so allow the nasal passages to enlarge.

In all cases of bringing forward the lower arch and jaw he did not believe that the condyles could become articulated, truly, in any other place than their natural ones, the glenoid fossa never would form a new socket, the condyles could not be retained in a forward position. He did not believe there was a change in the glenoid fossa or the condyle; he believed it was in the ramus and the surrounding parts of the jaw. If his patients were examined it would be found that the angle of the jaw had been changed and distal movement was impossible. With very young patients the teeth require little retention, only the balance must be retained for a short time. It was always absolutely necessary to put on a retaining appliance and the older the patient the greater the need for a strong firm retention.

The correct retention was the spur and plane appliance and it made no difference which teeth were used so long as the appliance was firmly fixed. In a great many cases of Class II it was found that when the molars were in correct occlusion the cuspids were not in proper occlusion. It was necessary to obtain absolute occlusion in the cuspid region as well as in the molar region, because if they were not properly occluded, there would still be a condition more or less of Class II, and if they were not in a position where they would settle normally, they would never be in correct occlusion. It was exceedingly necessary in correcting all cases of Class II to get every tooth in its proper mesio-distal relation and every tooth retained so well that it must remain so.

Dr. McBride

Emphasized what Dr. Law had said as to the intimate connection between the work of rhinology and orthodontia, and the influence that nasal disturbances might have upon the formation of the upper dental arch. He did not quite agree with Dr. Law with reference to the first molar always erupting in its proper position. There were causes that might lead a first molar to erupt abnormally, but to diagnose all cases as Dr. Law had intimated from the standpoint that the first upper molar was always in its normal position mesio-distally was not in accordance with his belief or practice. And granting for the moment that the upper first molars were in their proper positions and the lower jaw distal occlusion, the best result that we could obtain would be accomplished by moving the upper teeth backward to some extent and in that way harmonize the existing abnormal conditions. With regard to the change that took place in the bending of the jaw when a lower jaw had been brought forward, Dr. Law entertained the idea that the change took place at the ramus, but he did not agree with him. At the age to which Dr. Law refers, that is very young patients, the jaws were short, thick and rather massive, and the only teeth that were at that age perhaps in locking occlusion were the first molars, which were embedded in a bony process not yet fully developed. The operations of the muscles had a greater tendency to move the molar teeth in their embedded soft osseous tissues than they had in bending the thick, short jaw.

Dr. Law

Said it made no difference how thick the bone was in young patients.

There was not a fully developed first molar root, and the second molar was fully formed at the crown *only*. The whole jawbone was cancellous and there was nothing hard about it. One could take hold of the jaw of a child and bend the bone easily, and it was perfectly reasonable to suppose that it was an easy thing to bend the bone by putting power upon it. It was well known how rarely children broke their bones. He had seen cases where both upper and lower jaw were very narrow with teeth not more than an inch across the arch. Something had to change or bend in order to have the arches widened enough when corrected besides merely the process. If the measurement from ear lobe to end of chin were greater after the correction than before, and the articulation of the condyles was correct the bone had been changed because it was impossible for the chin to grow. He had proved to his satisfaction that all successful cases were corrected by a bending of the bone as well as changing the formation of the arch.

He had made a study not only of the teeth of the patients, but also of the faces and he had never seen in a case of Class II the upper molars mesial to normal. Often the upper anterior teeth were the ones which were too far distal, and many times a tooth would be found erupted inside of the arch caused by the loss of the temporary molar. He believed the upper first molar to be a point that could be taken in almost all cases as a basis of diagnosis.

Dr. Cooper

Said nothing definite seemed to have been settled about the bending of the jaw, and as Dr. Law and Dr. McBride had a number of cases every year in their practice it would be a good idea for them to make a collection of radiographs before the work was started and after it was finished.

Dr. Hawley

Said that he appreciated very much the value of Dr. Law's paper in the main and would compliment him highly upon the results of treatment which he had shown, but he thought that Dr. Law's conception of the effects upon treatment of Dr. Angle's views on the eruption of the first molars into their normal position was somewhat wrong. He thought Dr. Angle's paper must be taken in a broad spirit and its application to the practical work in orthodontia most carefully considered. He said that he was present when the paper was read at Chicago and upon the interpretation that in treatment the upper first molars were always to be left where they were found men of wide experience took direct and positive issue with Dr. Angle. And he thought Dr. Angle would admit that it is necessary in treatment often to carry back the upper molars to obtain the best harmony with an undeveloped lower jaw. On the broad proposition that the upper first molars are the most constant landmarks in the jaws which we are able to observe Dr. Angle is unquestionably right and this last paper containing his later observations on the subject very materially strengthens his former statements as to the value of these teeth in classification and diagnosis.

He said that, as to Dr. Law's opinion, that the lower jaw is bent either at the ramus or the neck of the condyle, in the correction of Class II cases, in his own experience he could see no evidence that such a thing took place, and as far as he knows Dr. Law stands alone in his opinion. It seems far more probable to him, with his observation of the force used in moving teeth and their action under retention, that the changes took place either in the temperomaxillary articulation or in moving the whole aveolar process along the body of the jaw with the teeth en masse. He thought the whole question was yet merely a matter of opinion and hoped that some one would be able to scientifically determine actually what takes place in these cases. Dr. McBride had observed more closely than any other man the movement that took place in the condyle, and he hoped he would continue to carry on his investigations and obtain some positive results. In his paper he had said that the influences which operated to narrow the upper jaw were not to be found in the lower and he believed that was true. He considered the influences which operated to narrow the upper jaw were mainly those of the nasal cavity and those conditions commenced to operate very soon after birth. He knew of no influences which tended to narrow the lower jaw, and in many cases where the occlusion had remained normal in the temporary teeth up to nearly the time of losing them, on the appearance of adenoids the lower jaw became distal, and therefore it seemed to him that it would not be a fact that the lower jaw had much influence on narrowing the upper, as Dr. Law had stated in his discussion. As to what took place in the treatment of Class II cases he was not prepared to say. It seemed to him all the facts tended to show that if the lower jaw was bent it must be retained or it would go back, and our retention is not adapted to that end. He said that he felt very grateful to Dr. Bogue for the presentation of his paper at this time for it contained a valuable demonstration of the practical use of his charts. He said that the work contained in the latter half of his paper was done upon the suppositions: First, that in a normally developed denture of a child say seven years of age the molar teeth should be in their proper width buccolingually; second, if the arch is narrow at that time it will not widen by growth without artificial aid; third, that if the arch is widened at that age carrying out the temporary molars to the proper arch, the crowns of the bicuspids will be carried with them and erupt in their proper places. He said this paper of Dr. Bogue's especially pleased him because it showed that, in these cases which Dr. Bogue had placed on the screen those "theories" were "facts" and he felt very much pleased to find that a man of so wide experience as Dr. Bogue had long entertained the same opinions.

Dr. Bogue

Was glad to hear Dr. Law say that in all young cases changes could be easily obtained, but he thought he would change his views bye and bye.

THE CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held September 25, 1906, with the president, Dr. Hart J. Goslee, in the chair.

Dr. C. Edmund Kells, Jr., of New Orleans, La., read a paper by invitation entitled, "Root Canals as They Have Been Filled."

DISCUSSION.

Dr. J. P. Buckley:

It is, indeed, a pleasure to stand here and look this large and enthusiastic audience in the face after our long vacation, and I think it is fitting that our winter's work, so to speak, should be started off in such an interesting manner.

The subject of filling root canals, as the essayist has so well shown, is one that has commanded the attention of the profession for years. It is one of the many subjects on which the profession can not agree; that is, they can not agree upon any one universal method, or one universal material for filling a root canal. I agree, and I hope that I am not disappointing this audience, when I say that I agree with the essayist in "immediate root canal filling." I differ from him, however, as to the time when the roots should be immediately filled. I do not believe that they should be filled, as he stated plainly in the paper which he read before, but in which he is more careful this evening, and modified the statement somewhat, immediately when the end of the root is bathed in pus and blood. The essayist does not understand evidently modern methods of treating teeth. He referred to ancient and modern methods. He divided the periods. Now, to take phenol, which was formerly recognized as carbolic acid, and work it down into a putrescent root canal is not a modern method of sterilizing these roots. What we want today, what the profession is not doing, is to study the chemistry of pulp decomposition. When I was in school I was taught that phenol was contraindicated in a putrescent root or blind abscess, for the reason that it was liable to coagulate the albumin in the canal, and, if it happened to be a fine, tortuous canal, stop up the canal. Phenol is contraindicated, but not because it is a coagulant, for there is nothing in a putrescent root canal to coagulate. One of the first things that decomposes is the proteid or albuminous material of the pulp, but phenol is contraindicated because it will not unite chemically or destroy the intermediate and end products which result from pulp decomposition.

Experience and observation will prove that the practice of filling root canals, according to the method of the essayist, is dangerous, to say the least, because the average practitioner can not go down into a putrescent root canal, one end of the root of which is bathed in blood and pus, and sterilize that canal in such a way that the tooth will remain quiet after the canal is filled. One of the most careful operators in this country, Dr. M. L. Rhein, of New York, every time a patient presents with a putrescent pulp or abscess, whether blind or with a sinus, if he has the time, goes down into that canal and chemically sterilizes not only the canal, but the tubuli as well. But he does not do it with phenol. He does it by means of Schreier's paste, sodium and potassium, which unites chemically with the end products and the intermediate products of pulp decomposition. By that means, in the hands of a careful operator only, a man careful enough to use it, the method is a success. Dr. Rhein has had the experience; he has the technique, and knows how, and he does chemically sterilize the tubuli of the tooth.

Again, we have made the mistake in the past in treating these conditions in a manner similar to what the essayist has done, using drugs empirically. What we want to do is to learn the composition of animal tissue; learn what products, whether they be intermediate or end products, result from the decomposition of animal tissue when it dies, and when it is invaded by pathogenic micro-organisms. I know that there are many circumstances and conditions which modify the action and effect of drugs. One of these is climate, and I would have thought it possible, if it were not for that letter which the essayist had the secretary read, that climatic conditions are such down in New Orleans that the essayist can do things there we can not do here in Chicago.

Dr. Case emphasized one quality in the character of the essayist at the dinner, and that is the quality of honesty. Dr. Case knows he is honest, and I know it, and every one knows that Dr. Kells is honest who knows him at all. He has the courage of his convictions and believes what he says. I would have believed that the climate modified the action of bacteria and ptomaines down in New Orleans if it had not been for that letter which was read.

DR. EDMUND NOYES:

But she went to a new climate right away. (Laughter.)

DR. BUCKLEY (resuming):

There is another thing in connection with bacteriology which may modify these conditions, and that is the virulency of bacteria and their poisonous by-products. Dr. S. A. Hopkins, of Boston, in a well-conducted series of experiments to ascertain the virulency of pathogenic bacteria in different mouths and in the same mouths under different conditions, proved conclusively that not only did bacteria propagate more rapidly in uncared for and neglected mouths, but that their pathogenic properties were much increased. This is a factor which we must take into consideration in treating these conditions; we have to consider the virulency of the germs that may be present in that canal and the poisonous and irritating properties of the intermediate and end products of pulp decomposition.

I would like to go into the chemistry of pulp decomposition, and, so far as I am able, tell you what I believe are the intermediate and end products, and then suggest drugs and remedies which will chemically act on these in such a manner that we can treat these teeth rationally, and not irrationally. But I do not believe I would be justified in doing that this evening.

I will not take up any more of the Society's time, Mr. President, than just enough to say, in closing, and I want the essayist to know that I, too, speak with a clear conscience and an honest heart, my remarks will not be directed at him, but to his method. I want to say before this audience unhesitatingly, that the method which he has described in detail in the latter part of his paper, in the light of our present knowledge of bacteriology and pathology is unreasonable, illogical, irrational, absolutely unscientific, and, so far as I know, it stands without parallel or precedent in the annals of our recent dental literature. I thank you.

Dr. Thomas L. Grisamore:

I want to thank the essayist, first, for writing this paper and the inconvenience of coming this long distance to read it to us.

Dr. Kells was here last winter and gave us a paper entitled, I believe, "The Microbe's Point of View," and in it he gave us a small homeopathic dose of immediate root canal filling, and I suppose from the way it acted he went home and prepared a full size old school dose for us. And I further noticed, that none of us took the dose until he was here to administer it. I suppose he wanted to see the first symptoms. By studying the history of the advance of our profession we will see that every new thing that has been offered to us; every new thing that has been advanced has been given to us with the advice that we use it to the exclusion of everything else we have used for similar purposes. It was so when vulcanite rubber came into use; it was so when porcelain first came into use, and it has been so with everything that has been presented to us.

The essayist says that it is not a new idea that he has advanced; but all the young men know that it is a new idea, and to a great many of the older practitioners it is new. He came to us and told us why he removes the root canal fillings, or the contents of those canals, and immediately fills them, and that occasionally he fills them immediately, which it seems to me, is putting the tooth in the same condition as when he removed the filling. It further seems to me, that anything which is out of the ordinary and which may be used as much as this is by the dental profession should be thoroughly tested clinically for some time before it is given to the profession, because we are too prone to take up new ideas, adopt them, and use them in practice. He takes teeth with putrescent pulps and fills them immediately. We know that the majority of us can not remove all of the decomposed pulp tissue without having trouble. We know that we can not remove putrescent material without forcing some of it through the apex of the root and causing irritation, probably a local abscess. Furthermore, we know that in some cases, yes, in most cases, after we treat these teeth with a germicide, the next time we can remove the contents of the root canals without setting up an abscess. Now, if we can not remove the putrescent material without forcing some of it through the apex of the root, how can we expect to fill the root canals to the apex without forcing material through the end of the root? Bacteria will work through the end of the root, whether it be in one climate or another.

He further states, that he treats teeth containing abscesses. It does not seem plausible to me for an individual to come into my office and for me to work for some time to get an opening into the pulp canal without a discharge of blood, pus and serum, and then immediately fill that root and seal the pus pocket as tight as it was when the patient arrived. You have the pus sealed about the apex of the root, and it must either be absorbed by the tissues, or it must bore its way out and form a sinus. If the root is filled, the chances are the sinus will not heal until you have opened into the pus pocket and thoroughly cleaned it out.

Another thing. He also advocates the filling of roots containing a sinus, which may be good practice in some cases; but, as a rule, it is better practice, first, to treat the tooth and see that the sinus is healed before you fill the root canal, because in some cases you know if you treat teeth containing sinuses once, in a week or two the patients come back with the sinuses not healed, and after you treat them again the sinuses heal. It may be necessary to treat some cases three times before healing of the sinuses takes place. Immediate root canal fillings are indicated in some cases. In those cases in which you have removed the pulps and have sterilized the roots, if there is no septic material in the root, you can immediately fill the root canals. In other cases in which there is septic material in the roots immediate root canal fillings are contraindicated.

The essayist has advanced nothing along the line of root canal filling to show that it is logical to fill the canals by other means. He has advanced no theories of medicines, nor of any drugs that will act in such a way as to make it plausible for these cavities to be sterilized afterward.

That is all I care to say on the subject, except I want Dr. Kells to think that we are not unjustly criticising him. Probably we are not capable of criticising him, on account of lack of experience with this particular method, because I do not believe there are many dentists in this room who have practiced filling the root canals in the class of cases to which he has referred, and if any of you contemplate practicing this method, I would like to have an office near you to see the final results of your work.

Dr. William H. Taggart:

Last year, when I had the pleasure of being your presiding officer, and Dr. Kells was the guest of the evening, he incidentally referred to immediate root canal filling, and as the presiding officer it was all I could do to switch our Chicago boys from that part of his subject, which was merely an incident, as the subject proper was "From the Microbe's Point of View." Ever since that time the boys have been ready for Dr. Kells when he came.

Dr. Kells mentioned a number of cases he had treated. Of course, it may not be a real scientific reason why Dr. Kells treated that young lady, who was so beautiful and had such bad teeth, for forty-two days, and the other patient, who was, according to his admission, plain in features, only a short time. (Laughter.) I thought this was an incident worthy of mentioning.

Dr. Kells spoke of not using any means of enlarging the root canals by drilling or otherwise, as he puts it. If Dr. Kells has not adopted the Callahan method of using sulphuric acid in root canals, he is missing one of the greatest boons to modern dentistry. Dr. Callahan some fourteen years ago was invited to read a paper before the Ohio State Dental Society. At that time the Society was not progressive enough to print any of their transactions, and one of their rules was that any paper read before that Society was the property of the Society, so that a good many good papers were laid on the shelf. Callahan and I were chums in college together, and on the morning of the day he was to read this paper I received a letter from him and the manuscript of his paper, stating the fact that after ten o'clock that morning the paper would become the property of the Society; that if I saw fit in any way to have our progressive Chicago dental journal take hold of it and get in into print, he would say nothing against it. Dr. Johnson at that time was the editor of THE DENTAL REVIEW. I read Callahan's paper and saw the importance of it. I immediately telephoned to Dr. Johnson and he said the magazine was already in print. I urged on him the importance of printing the paper, if possible. He delayed the publication of the issue of his journal long enough to get the paper into print, and that is the way it first came to the knowledge of the profession, and from that time until now I have been using that process. No modern method of treating teeth has profited me so much as the use of sulphuric acid in root canals.

DR. WOOLLEY:

What per cent?

DR. TAGGART:

I use chemically pure sulphuric acid, or 50 per cent, depending upon the conditions.

In regard to entering these root canals, there is no broach made smooth enough, or probe that is small enough to get into them that the use of sulphuric acid is not needed to enlarge, and Dr. Kells said that if the canal is so small that he can not introduce a bristle he does not care much about the contents of that canal. The contents of small canals may be such that gases enough will form there in comparison to the space they have to expand in to cause just as much trouble as if there were ten times as much, because the pressure and irritation are there. These canals can be enlarged very beautifully and made accessible in hundreds of cases with a bristle. The ordinary bristle you buy would enter easily, if at all. But it may meet an obstruction and by the use of sulphuric acid and patience you can get by this and find the trouble beyond the obstruction. Those are quite essential points in my practice, and I feel justified in following them.

Another point about immediate root canal filling. I have contended for a great many years that we could use certain remedies with advantage in these root canals. I raised quite a hub-bub at the first meeting of the Northern Illinois Dental Society eighteen or twenty years ago, when the essential oils came into use, instead of creosote of former days. It was stated that if we put those agents into root canals they would take care of the contents, would mummify and disinfect, etc. At that meeting, or rather after it, in the office of some of the Chicago dentists, who were advocating these things, I made the statement that I would rather have a root canal in my own mouth filled by a dentist capable of cleansing that canal mechanically and doing it with water, and the mechanical treatment of that root canal, than to have some of the dentists I knew to treat it with the best antiseptic they could possibly use. I have followed that plan ever since. Cleansing the root canal is the main feature. In the sterilization process with this agent you can penetrate the tubuli, if you use the root canal drier which Dr. Kells objects to. The theory has been that you dry the canal so thoroughly that there is almost a vacuum formed, so that whenever new liquid enters into that canal it sucks it into the tubuli and disinfects them. You can not use a root canal drier hot enough to dry out the root that is all the time bathed in a fluid or is absolutely moist. You can sear it over from the root canal side, but can not dry it out toward the periosteum to get the root canal dry. You can do it by allowing an antiseptic to lie in there and soaking through it, or into the porous tooth substance. You can do that in the course of a few days, but you can not do it in the course of an hour or two. You may embed the root in plaster-of-Paris, and at the end of the next day or two days you can smell the antiseptic, oil of cloves, clear through the plaster-of-Paris, but you can not get that effect inside of two hours. For that reason, I think a root canal should be thoroughly mechanically cleansed at the first sitting the patient comes. I do not care to disinfect it at that time; I make a thorough saturation and allow the medicine to stay in the root, if it is putrescent, for several days so as to disinfect clear to the periosteum. You get rid of the tenderness about the tooth. To substantiate that theory, I will say this, that oftentimes I have filled a tooth and the sensations of the patient are that the root canal was not filled properly; the tooth is lame and uncomfortable, and by going into the canal I have found the root has been filled as thoroughly as it could be. After getting the filling out and saturating the tooth with a disinfectant, antiseptic, or germicide, it will get over that discomfort. The tooth will feel comfortable, showing the advantage of thoroughly sterilizing, saturating and disinfecting the tooth clear through to the periosteal periphery.

Dr. George W. Cook:

The subject that Dr. Kells has brought before us is one of considerable interest to the members of the dental profession. He mentioned it last year incidentally in a paper he read at that time, and we are all glad that he has come back and reiterated what he then said in a more emphatic manner.

I think if Dr. Kells were to practice modern surgery as he practices dentistry there would certainly be more tombstones in New Orleans than there are at present. The surgeon would hardly think of opening an appendiceal abscess and of removing the appendix, then bringing the walls together and stitching them up and leaving the case to nature; but he would put in a little drainage and get out the contents of that abscess. Dr. Kells makes a hole through the jaw with his drill very nicely and quickly, and the patient goes on his way happy and rejoicing, cured of an abscess. There is certainly something in favor of what Dr. Kells says—a little, although he has been criticised vigorously. I think in a great many instances teeeth are overtreated.

I have heard men say a number of times, not a great while ago, even in modern times, they would rather practice dentistry with carbolic acid than any other one agent, if there was only one to practice with. Dr. Buckley says that carbolic acid is a relic of the past, and so far as germicidal properties are concerned, truly it is. I think it is pretty generally conceded among those who have done bacteriological work that carbolic acid is a poor sterilizer in the sense of being a perfect germicidal agent, and the reason for that is, it coagulates the albuminates and does not penetrate into the deeper part of the mass of bacteria that may be gathered at a particular point, as in the case of an abscess. But I suppose the way Dr. Kells' cases succeeded so well is they coagulated the albuminous substance around them, and the rest of them starved to death because they could not get through the coagulated wall. (Laughter.) Of course, I can not agree with the essayist in all the cases he has cited that his is the best method of treating them. But there are many cases he mentioned which, after considering the circumstances and conditions of them, I might treat in the same way. There is one thing sure: if we keep a lot of irritating drugs out of the way the tissues will kill a great many bacteria. The leucocytes of the blood have great inhibitory power over bacteria; but if you use irritating agents which the leucocytes are just as susceptible to as the agent is to bacteria, then you will have destroyed the power of the tissue to take care of many of these micro-organisms which are so destructive in their general tendencies.

We can not say that a micro-organism which is producing pus constantly in a cavity is not very virulent, because these organisms are usually virulent, and certainly would be as active in their destructive processes as any you could find. Therefore, the very fact that the bacteria themselves are virulent, we need in such cases to use antiseptics and let them soak in for a while. It is quite impossible, however, to destroy immediately bacteria by any agent. We know that many of them will stand heat at the boiling temperature of water for thirty minutes almost without impunity. Furthermore, we know that many of these organisms will become encapsulated in the tissues and remain dormant there for years. That has been observed by Koch and others. They will remain dormant for nine years in some tissue. Instances are frequently brought to the notice of the surgeon where infection has existed in a part or organ of the body for a number of years without creating any disturbance, and then under conditions unfavorable for the life of the patient in the way of disturbed metabolism these organisms immediately become active and produce blood poisoning, so-called, so that perhaps in a year or two longer many of these cases will return to Dr. Kells and to other dentists, more likely to other dentists, and will show a lack of proper soaking in of the medicinal agents.

It is interesting to have such a subject as this brought before us occasionally, even though a man's ideas are radically different from our own. It brings back to him some of the things that he has done recklessly, that proved to be successes. It recalls to our notice that sometimes we can do very bad dentistry and the patient not find it out. (Laughter.) I am really glad that our friend Kells has come up here from New Orleans to read this paper. We recognize him as being honest and as believing exactly what he has said. I think before the evening is over Dr. Kells will give you another account of this subject, and we will be very glad to hear from him.

Dr. R. J. Cruise:

I do not know where to begin this discussion from my point of view, whether it be in thanking Dr. Kells for the results of years of experience given to us tonight, or in a good roundabout abuse of the scientific men who have attacked him so vigorously.

When this subject was touched upon incidentally by him in a paper read before this society some months ago, I made some mention of it, but was told that the discussion on that subject was out of order because it was not the subject of the paper. I asked some questions of Dr. Kells, as did others, but they were overlooked, as all of the questions were overlooked on this subject. It was merely a side issue, Dr. Kells said, in closing the discussion. Now, I am pleased that Dr. Kells has given us a paper on this subject, as I think it is going to open up a field that will be extremely interesting to the dentists of this country and of all other countries. Immediate root filling of putrescent pulp canals is not probably practiced very much, but it is going to be practiced more and more every day. I feel that I am perfectly justified in making that prophecy. Science is a very fine thing. Where would we be if it were not for scientific investigation? But, gentlemen, what on earth is the use of scientific investigation, no matter how deep and searching it is, if we can attain satisfactory results along other lines which are not in accordance with that scientific investigation? That is exactly what we can attain in the matter of root canal filling without the scientific investigations of my friends Buckley, Cook, Grisamore, or any of the rest. Dr. Kells has been filling root canals for years in this way. He has been using a drug which has been condemned as useless; but, gentlemen, that same drug will be used as long as dentistry is practiced, and that same drug will give the results to any of you, if you will use it, that it has given to Dr. Kells.

Dr. Grisamore made the remark, how can we expect to get a good result if we can not get into the root canal without forcing some of the putrescent matter through the end of it, filling up the root canal, and closing it in on the other side of it. I am anticipating a reply from Dr. Kells when I say by forcing carbolic acid in and disinfecting what you push through the end of the root canal.

Dr. Kells:

It enters the tissues, carbolic acid and all.

Dr. Cruise:

We are too prone to forget what nature will do for us. I am sure Dr. Kells has thought of that thousands of times. The strong arm of nature, so to speak, is forgotten in our treatment. Stick your cotton in the root canals and leave it there. What does it do? The medicated cotton loses its value as the days go on; it sucks up the putrescent matter in the other side of the canal; it works its way through the tubuli and dentine and keeps up irritation of the pericementum. Disinfect at once the root canal, close it up, and then you will have peace and quiet in that tooth. For a day or two you *may* have a *little* soreness. I am speaking from experience, though I grant you that my personal experience is limited. I have only a record of twelve cases since Kells spoke to me about this treatment, and I will not go into the details of them. I have not begun it as a universal practice, as Dr. Kells advises it, because I have not had the courage to do it in all cases, but I have not had a single failure in any of the cases in which I have followed this treatment. I have filled root canals immediately where there was a blind abscess and pus in abundance and they have given no trouble. It is very essential to use the proper broaches. There is a great point. You should use broaches with which you can get through the ends of the canals. and the only broach which is a success is a jeweler's broach, properly tempered, with which you can use force without its doubling back on you.

I use sulphuric acid, which Dr. Taggart spoke of, to open root canals. I use carbolic acid and force it right up through and through these putrescent canals. It must go through the canals. If there is a sinus I force it through that. There is not as much soreness in these as in the acute cases.

There is one point I would like to mention, although I may be criticised for referring to it. The dentist who treats a patient's tooth several times before filling it may seem to the patient to be deserving of a larger fee than the man who treats a tooth once and disposes of the case.

In so far we may seem by this latter method to be depriving ourselves of an easy method to increase our bills. However the other aspect of the subject is that if we can dispose of a case satisfactorily in one treatment we save ourselves time and an expenditure of energy, we make friends of our patients, and in the long run we are ahead of the man who drags out his treatment cases in a manner that is not necessary. So as Dr. Kells has said he has not only saved his patients thousands of dollars but has saved himself much of the valuable time and great energy that is necessary in the treatment of teeth.

I believe that is all I had to say except that my attention was first directed toward this subject by the gentleman who I referred to (Dr. Lind) when I previously spoke on this subject in connection with the paper which Dr. Kells read last spring. My attention was directed to the subject fully three years ago by him, and he told me at that time it was his universal practice to fill root canals immediately for over two years, and his treatment is practically identical with Dr. Kells, and which I have used in the twelve cases mentioned. This gentleman was not with us at that meeting; he was in Mexico at that time on a visit. But he is here tonight. He is a modest man. I have known him for several years, and he has a record which beats that of Dr. Kells. He has been filling root canals by this method for five years, and the other night when I was talking with him on the subject he told me he had had but one failure.

With regard to failures following this method, think of the poor results you have had from other methods, where you have treated teeth dozens of times and have had failures. If the percentage of failures which Dr. Kells has had is less than the percentage of failures from other methods of treatment, it is a recommendation for immediate root canal filling.

Dr. Otto Holinger:

The pathological and physiological processes involved in the treatment of conditions in the mouth are so interesting, that I will take the liberty to discuss briefly this subject.

Dr. Kells is a man who evidently has acquired that practical knowledge and experience which allows him to do the proper thing at the right time without being able to tell just why.

In reference to the treatment of putrescent pulps, as Dr. Buckley has said, we have not the original condition of the pulp, with its albumin and definite structures, but we have products formed which give rise to gases and infection, and one of the best solvents for these substances is water that dilutes the products.

As to the use of carbolic acid, it is a good disinfectant, a good germicide, and an antiseptic. Of course, in taking it into the laboratory and comparing the experiments with formalin and carbolic acid, we will find that formalin is a stronger germicide than carbolic acid. But carbolic acid has a property something like iodoform of being a penetrating antiseptic. Carbolic acid is volatile, more so in a warmer atmosphere. If you put carbolic acid in a tooth it volatilizes. Carbolic acid must be volatile in order to be detected by smell, so, therefore, it slowly volatilizes under ordinary circumstances. Pure carbolic acid, as used in the tooth under these circumstances, is a strong germicide and is considered so by surgeons because very frequently in the most important surgical operations the knives are put in a carbolic acid solution. We grant you, it takes a few hours to completely sterilize the bacteria and destroy the spores of bacteria. The carbolic acid clings to the tissues of the mouth and forms a sterile coagulum, so that, I think, it is a good agent.

After the pulp has been washed out as much as possible it coagulates and permeates all tissue about it. It will do for mummifying, for instance, as the essential oils will do for mummies. The ancients used these medicinal agents for preserving mummies. We talk so much of closing the root canal and leaving pus outside of the tooth. It is granted that the canals are cleansed and dried and filled completely. First as much of the putrescent material outside of the end of the root being taken up as can be by the pressure of the walls of abscess forcing the pus around the tooth through the canal, and being wiped out in the process of cleansing the canal. That is where many a canal derives its moisture. When the pressure is removed, you will find the tissues have a great absorbing property, and forcing a little carbolic acid through the canal I can readily see how the diluted carbolic acid can sterilize and stimulate the inside of the pus sack and so help absorb the remaining products. We have a great deal of water, and carbolic acid in 10 and 5 per cent solutions is not a coagulent. It is a germicide, stimulant, disinfectant, etc. By closing the root canal, so that you can not get any moisture in there, under most circumstances, the products outside of the root canal will become absorbed by the tissues, and finally the cavity abscess will heal up by granulation. Occasionally failure occurs, and I think it can be explained in this way. You will notice that in any large abscess if you have an opportunity to see one, take the abscess in an old felon and try to collect the contents and see the fibrin that is formed in there. After washing the cavity well you will notice little projections, new capillaries formed, called granulations, and frequently they form pockets and bands, "adhesions," in which the pus microbes collect or are held. In bone, for instance, pus may be circumscribed for years without giving rise to any trouble, but when there is a fracture of the bone, or a lessening resistance of the patient's vitality, trouble ensues. That is the bad feature of these operations of immediate root canal filling. If the condition of the person is normal, frequently everything will be quiet; but in an emergency case, like a case of typhoid fever, or in time of war when men live under bad sanitary conditions, or down south where there is malaria or yellow fever, there is lessened resistance on part of people, and on account of this an abscess may start up.

As to getting into these root canals, I never now use any broaches, or anything like that. I use a broach to wipe out the canal, but all drills and such things are a thing of the past. Sulphuric acid is also used; but this agent produces a roughened wall, and that frequently is not wise to establish if you have putrescent material in there. I try to take a little longer time to sterilize the canal by using papain for liquefying digesting contents of the canals. Papain is left in a week or more at a time, and only two to four treatments are required to liquify the contents out of the finest canal, which is then washed out with hydrogen dioxide or warm water, and then dry the canal after last application of papain with alcohol, insert an essential dressing for two days and proceed to fill canal as usual. I really think that all organic matter, that is all masses of tissue, should be removed from within canal, for the pressure from the gas formed might burst the tooth. For that reason, I think, perhaps, the failures that Dr.

Kells and others report are due to a small canal being allowed to escape notice. In that way, as long as there is putrescent tissue there, you will get constant irritation by escape of gas and bacteria centrated into space left in canal by serum to form more gas, which will keep up the abscess formation.

P. S.—Since the reading of the paper have filled about ten roots as Dr. Lind directed and so far have had no trouble, but will make experiments in laboratory in near future.

Dr. Frederick B. Moorehead:

There are some questions in the field of modern pathology and practice so patent that "a wayfaring man, though a fool," need not be mistaken. There are other questions which are so intricate that none of us quite understand them. The subject under discussion belongs to the former.

In a given case where there is pus in the tissues, it is manifestly impossible, and almost ridiculous, to attempt to seal it up, no matter what agent may be introduced at the time. I can conceive of cases where the pulp is dead and has not become infected, where its removal might be undertaken, and the root canals filled immediately, with good results. But, on the other hand, given a case where the pulp has become infected, where there is pus in the root canal, pus surrounding the apex of the tooth, there is no process known by which that pulp canal can be properly treated and filled at one sitting absolutely none. As Dr. Buckley has said, it is absolutely unscientific. It is unreasonable. It is impossible. If a man will take carbolic acid in his laboratory and will use it with the bacteria found in pulp canals and in all sorts of abscesses in the oral cavity, he will discover that it is of very low bactericidal power. There is only one bacterium which is readily, quickly attacked by carbolic acid, and that is the tetanus bacillus. A 5 per cent solution of carbolic acid will destroy the tetanus bacillus in a few seconds, and perhaps it is the only bacillus that is quickly destroyed by carbolic acid. Of course, the rational treatment, after the pulp contents have been removed, is to seal in some agent to destroy the remaining bacteria, and perhaps at a second or third sitting the root canal may be filled with impunity. I believe that there are as many teeth overtreated as there are under-treated, and I think Dr. Kells' pendulum has swung in the wrong direction.

Now, with reference to drilling a hole through the alveolus, I think that is absolutely unpardonable, because in many instances you will inflict a condition which will be far worse, far more reaching in its destructive effect than the infection found in the tooth. To deliberately drill in through healthy tissue and possibly carry in some of the virulent microörganisms which would play havoc with the tissues is unscientific in my judgment. I take issue with Dr. Kells in every step of this operation. This is not a personal matter; but it is the method I am attacking, and I do not overlook a fact which we oftentimes overlook, namely—personal equation. Dr. Kells may do things with carbolic acid that I can not do. He may treat these cases more successfully than most of us. The personal equation is an important element and is not to be overlooked in any process in medicine or dentistry. I think the extreme of his method is not to be followed.

Dr. Edmund Noyes:

I do not like, on general principles, the idea of an universal mode of treatment of all cases alike, regardless of a very great variety of circumstances and conditions in which we find them. It is evident from the records of these cases that a great many more teeth could be filled at the first sitting and be comfortable and successful afterward than most of us are in the habit of doing in that way. That is not only apparent from the records of the cases reported, but from the records of numerous cases that have been published in the last twenty or thirty years in this matter of immediate root canal filling. This subject is not new. We have heard men advocate it as strenuously as Dr. Kells has a long time ago. It seems to me that it would be more useful if we attempt to make some discriminations, and find out the exceptions, if they be few or many, to the cases which ought to be immediately filled. In listening to a considerable number of these cases, any one understanding the scientific aspect of the matter would say at once that the root canals could probably be treated and immediately filled. For instance, all those in which the pulps are dead, with no opening into the pulp chamber, and consequently no infection in the ordinary sense of the word which leads to the formation of an abscess, no pus infection, we would expect all such cases could be cleansed out and the root canals filled immediately and get well, making no very serious trouble afterward, but the question as to whether the root canal could be more comfortably treated a few days later is another matter, or whether the soreness following immediate root filling would not be greater than would be necessary to inflict upon a patient. That may not be the case in some instances, but in others I should suspect it would. It is true also, that a good many small abscesses will get well after once being evacuated; and a good many cases of abscess with a sinus, if it is merely a sinus, will get well after one treatment which disinfects or cauterizes, or both, the whole tract of the sinus. But we find many abscesses that involve something more than a mere sinus. There is some destruction of the alveolus in the apical space. There may not be a limiting membrane around the abscess. In other words, it may not have a sac which is able to confine the infection there; the infection may have penetrated into the substance of the bone itself a considerable distance, and in such case it will not get well after once forcing through of medicine, because the disinfectant, whatever it may be, no matter how thoroughly it may be used, will not in a few moments penetrate into the bone cells as far as the infection has penetrated. Such cases must be treated for a longer time. Even in these the question arises whether we may not just as well fill the root of the tooth at once and conduct the subsequent treatment through the sinus. But there are unquestionably many cases in which the root of the tooth is an aid in the thorough cleansing of the abscess cavity. When it is, that would be a very urgent reason for delaying the filling of the root.

There are other questions that arise even in cases of immediate extirpation of healthy pulps. It is not always practicable, at least in my experience, to stop the exudation of blood and serum into the root canal perfectly and promptly enough to get it as dry as is desirable for a perfect filling. Dr. Ottolengui, I believe it is, has suggested that some of the cases of extreme soreness after these operations may be due to the infiltration of blood or serum or the formation of a clot in the apical space, because it can not escape into the canal of the tooth after it is filled, and the bleeding continues a little. It is not merely a question of whether the tooth will get well; but it is also a question of whether it will get well with the most comfort to the patient, and it seems to me that in a great many instances, in every instance in which the root canal of a tooth is a convenience for the treatment, it is wise and safe to see the cure of the disease before we fill the canal.

Of course, there are a great many aspects to this subject which I can not stop to talk about now.

Dr. J. H. Woolley:

We have been pleasantly entertained by our brother practitioner from New Orleans, and I think it is well that we have had an interchange of thought and of ideas, because otherwise we may become narrow and one-sided in our views. But be that as it may, we are of different minds, and we do not all think alike. But when we study these questions, it must be from a basic principle. As in art there is a basic principle, so there is a canon of literature by which literature is judged, and in the same way, it seems to me, there are canons of science by which methods of practice can be judged. From my point of view and experience, immediate root filling under the circumstances that have occurred in Dr. Kells' practice in many cases, if the doctor will pardon me, is unscientific.

Now, in considering a diseased tooth, we know that it can be the unconscious cause of trouble by reflex pain, not only in the face, but in other parts of the body. We know that many of the ills that flesh is heir to, as, for instance, gastritis, may be caused by an unconscious diseased condition of the teeth. Given the diseased condition the question is how to reach a cure. We have been led to believe that it can be accomplished through the judicious use of antiseptics. I believe that a tooth before filling, when it is in a suppurative condition, should be thoroughly disinfected—the tooth structure, pulp canal, and the area surrounding the tooth. Only under those conditions can a tooth be filled and become a healthy member.

I could say a good deal more on this subject, but I do not want to take up any more of the time of the society.

Dr. C. P. Pruyn:

I was in hopes I might be excused from addressing you this evening, because Dr. Kells is an old friend of mine. I have a good many friends in the sunny South, and Dr. Kells I count as one of my dear ones.

Last winter, when he appeared before us, I was one of the almost irrepressible members as he threw down the gauntlet so cleverly. I could scarcely sit quiet at that time; but on account of the other portion of his address it was thought best not to take up the matter of immediate root canal filling then. Now, he comes to us in a condition for a fight, and we all like a good fight. We admire a man who can stand up and defend what he considers the principles of right, even though his ideas are diametrically opposed to the principles we have.

He has given us something of a history of this matter. We are all interested in history, ancient history and modern history; but the address we have heard this evening is mediaeval history; and if any man, after listening to this paper, has the temerity to follow out the instructions contained in it, I should be very much surprised. I do not see how a man, who considers himself to be a scientific man, could appear before the Chicago-Odontographic Society and give an expression to such heterodox ideas, for they are wrong from beginning to end. Of course, there is nothing new about this method. Our fathers practiced it long before I was born.

If time permitted, I would like to discuss the subject further; but we do not want to stay here all night, and as so many men have preceded me, with these few remarks I would like to be excused.

Dr. R. J. Cruise:

In justice to the subject and the essayist and the society, I would like to hear some remarks from a gentleman who has practiced this method for five years—Dr. Lind—with great success, and who, I think, will explode some of the wisdom that has been promulgated by these highly scientific men.

Dr. C. L. Lind:

The essayist has gotten such a terrible flaying this evening that I am almost afraid to say anything in defense of his paper. However, the many severe criticisms, heard here tonight on the improper sterilization of root canals, I consider unjust and largely bosh; for if both ends of a tooth are *thoroughly sealed* any remaining germ matter will never give further trouble. I claim that the failures in the treatment of root-canals are due not to improper sterilization but to failure in thoroughly filling and sealing the apical foramen. There are very few operators skillful enough to thoroughly fill *all* root canals they come in contact with.

How many operators, in the preparation of cavities, remove, absolutely, all the germ matter or leathery decay (which is one and the same thing)? And yet these germs never cause trouble if the margins are thoroughly sealed with the filling. I hold, that if you exclude all air and moisture from these germs they must remain inactive—although they may live. For ten years I have filled teeth in this way and with practically no failures.

The same holds good with root canal fillings—in fact, I can recall but a few failures, and in each case it was due to carelessness on my part or inability to properly fill a root canal.

As Dr. Cruise has said, I have practiced this method for five years, three years exclusively. For two years I did a good deal of experimenting, and I recall but one failure in treating my patients by that method, and I made a special trip to Dr. Cruise's office to tell him about it. And the case was nothing unusual. It was simply a blind abscess that had progressed for three days; I filled the roots immediately, and the patient returned at the end of twenty-four hours. I lanced it, and that was the end of the trouble. I invite any of you gentlemen to come to my office at any time to inspect my method of root canal filling. I will give you access to my books, and I will give you permission to call on any of my patients, if you desire, and ask them if they have had or are having any trouble from having their root canals filled immediately.

I was surprised to hear the opinions of some of our leading men—men whom we hear every time we come to these dental meetings and who give clinics. I attribute their views largely to the fact that they have never experimented along this line. I do not see how they can practice dentistry without experimenting some. I do not, however, approve of Dr. Kells' method of treating teeth. I do not believe that any cement filling can be inserted and seal the apical foramen of buccal canals—I am convinced of that.

My method is very simple and as follows: If there is pus in the canal, I wash the canal thoroughly with a 3 per cent solution of peroxide of hydrogen until foaming ceases, after which I flood the canal thoroughly with carbolic acid and make an effort to force some of the acid through the apical foramen and into the pus sack. I then dry this out as well as I can with cotton wrapped on a broach, and line the root canal with sandarac varnish, not for its medicinal effects alone but also to render the walls of canal sticky so that when the chloro-percha is introduced it will not draw back with broach and will insure a perfect filling. I then insert a canal point as usual.

I have nothing further to say unless it is to cite a case that came to my office three or four months ago. I have been preaching this method of immediate root filling to Dr. Cruise for five years. We had some hot arguments about it. As he sat in my office an old patient came in with a central incisor that had been filled with cement more than twelve years and was giving trouble. There was a dead pulp and some swelling. I called Dr. Cruise and said I had a typical case. I said to him, I want you to stand right by the chair and watch me. I removed the filling and opened into canal and a few drops of pus came out, followed by blood and pus. It took about twenty minutes to absorb all of that bloody pus, after which I filled canal immediately. Dr. Cruise remarked that the patient would be back in a few hours or before the next morning. I said, No he won't. To the contrary, the patient got immediate relief from all pain and had no further trouble other than a slightly sore tooth for about twenty-four hours following. This is but one of dozens of cases. I fill all root canals immediately. I always instruct my patients in leaving the office that the tooth may be sore for a day or so, but after that they will have no further trouble.

Question: Do you use the rubber dam very much in filling root canals?

Dr. Lind:

I do not use half a yard of rubber dam in three months. I can safely say that.

Question: How do you dry your canals?

Dr. Lind:

I use cotton rolls around tooth, and cotton on a broach for canals. I do not care whether I get them absolutely dry or not as long as I get all of the pus out of the cavity and can flood the cavity with carbolic acid which coagulates and stops oozing of pus. The sandarac varnish will mix with the carbolic acid, and what is more, it will take hold of the walls of the root canal and stick there. Then your chloro-percha will hold to it. Here is a point I want to bring out. My idea is this: There are very few cases where you open into a blind abscess that you get drainage through the root canal. To be honest about it, how many cases do you get drained through the root canal? Is not the apical foramen plugged up, so that there is no drainage through it? I think so. Is there any reason why we should not fill the root canal immediately? If we open up the root canal which is full of infection and remove the cause, nature will do the rest.

Dr. Gallie:

You say it is a blind abscess. You say you do not get drainage; perhaps it is an encystment. If this be true, what is the use of touching it at all?

Dr. Lind:

The apical foramen is not plugged up at that time. Gas is forming in that root canal, and we should open to allow it to escape.

Dr. Gallie:

Would you put a rubber dam on and go through the apical foramen?

Dr. Lind:

I never apply rubber dam until after I have such roots thoroughly located and opened, and then only in such cases where I can't use carbolic acid without getting it on surrounding tissues. There is not one dentist in a hundred who can go through the apical foramen of buccal or messial canal.

Dr. Gallie:

What is your theory? How do you effect a cure if the apical foramen is closed and the trouble is beyond that? It cannot be the contents that cause the trouble.

Dr. Lind:

It is the contents of the canal that caused the trouble. The gas formation forced or carried infection through the apex, and as soon as you open the canal it is the back action caused by the abscess in an effort to relieve itself which clogs the apex. That is my theory of it.

As I have said before, I am willing to invite any man to visit my patients, or the society can appoint a committee to go and see any of my patients whose root canals I have filled imediately. I keep a detailed record of every case I treat, and these records are at your disposal. I have practiced this method now for five years, and for three years exclusively. I predict that within a very few years immediate root-canal filling will be practiced by the majority of dentists who fill root canals at all.

Dr. William E. Morris:

Any one who knows anything about me, knows that I have been trying for the last thirty-five years to save as many teeth as possible. I do not believe in extracting any tooth unless it is dead. Because the pulp is dead, the tooth may not be dead, nor the roots either. When you remove the roots of teeth nature soon does the rest. I used carbolic acid years ago for fistulous sinuses, pumped it into the sinuses, but found it only effected a temporary cure. I then used sulphuric acid and it did the work. Even in cases in which there was necrosis it did the work. Let us try to save teeth, or else quit the practice of dentistry and go to farming. I do not pretend to be scientific; but I have found out by my own brain that certain things can be done which will cure teeth and they will stay cured for thirty years or more. I can show you teeth that were filled with gold thirty-three years ago, and they are perfect today. I have a man now whose teeth I have treated and cured; he is blind; his eyes have been cut to pieces by oculists without relief, and if his teeth had only been treated in time he would have his sight today. I firmly believe this. I have had one patient whose teeth I filled with cotton thirty-three years ago. He came to me recently to have the cotton in that tooth removed because the tooth was sore. I found a remnant of the pulp, and burnt it out with carbolic acid. I burn out everything with carbolic acid. If I run an instrument into the pulp chamber I wrap it with cotton and seal the cotton over with carbolic acid. Nature will take care of the rest if you only remove the irritant. If you have pus, let it out. If you have not pus to deal with, and there is irritation there which will likely cause an abscess, introduce a little cayenne pepper, cover it over, and nature will do the rest.

Dr. George W. Cook:

As some of the speakers have indulged in the recital of cases, I would like to recite my own personal experience. A very skillful operator some years ago, when I applied to him to have some work done, said that I had a putrescent pulp canal that was troubling me, and as I was in a hurry to get through he suggested that he fill the root canal immediately. I said, go ahead and fill it, but be sure you sterilize it. He proceeded and filled the root canal immediately. It took Dr. Brophy and Dr. Gilmer about three weeks to get me out of bed. (Laughter.) That was the result of immediate root canal filling in my own mouth.

One of the speakers said he was surprised that no one had experimented along these lines. I have experimented not only on myself, but on some of my patients that other dentists have now. (Laughter.) I recall an instance in which I thought of extracting a couple of teeth, and I made some experiments with the patient with his permission. I filled the root canals immediately, and he had trouble afterward.

I have teeth which were thoroughly sterilized and treated in the ordinary manner, and have been inoculating these teeth with certain bacteria and sealing them in there. In one case I removed the filling and found bacteria eighteen months after that, the same micro-organisms I had introduced into the root canals before filling them. Let me cite another instance.

A Frenchman some years ago read a paper in which he described some experimental work by making holes in teeth and planting bacteria in them and sealing them up. These holes were made in the teeth of sheep. The sheep were turned loose for a certain time, after which the filling material was removed to see if the teeth still contained bacteria. The pulps were not removed. Frequently all bacteria were not removed from the dentine when the teeth were prepared for filling, according to the statement of our friend Kells.

If that be true, what is the use of extension for prevention, a plan of practice that has been introduced by Dr. Black and followed out by Dr. Johnson and many others? Extension for prevention of decay in teeth has come from experience and observation and the cultivation of scientific work. We find it necessary to extend cavities for the prevention of further infection or decay; and we know that if we do not remove practically all bacteria before we put in a filling, we may just as well not put it in, because the trouble will return.

As I said in my previous remarks, I believe that there is an element of truth in Dr. Kells' paper.

As to Dr. Lind's remarks, I would like to go to his office, see him fill these root canals immediately, and then follow his patients.

If he can do what he says he does, then Christian Science is a good thing. (Laughter.)

Dr. Hart J. Goslee:

I desire to express my personal appreciation to Dr. Kells for coming here and contributing this paper which has elicited such a lively discussion.

I think most of you ascertain from the reading of his paper that he makes it a universal practice to fill roots immediately. He said that without any hesitation whatever, but all of you know that there is perhaps not one single, much less *radical,* practice in dentistry which may be made a universal one, and which will invariably be successful.

Again, Dr. Kells said that oftentimes he had trouble from this practice of immediate root filling. He quoted from his own records and indicated that some of the teeth he had filled by the immediate process even had to be removed afterward. From the proportion of failures given in these records, I think he condemns his own method. Certainly that proportion is far greater than we have today, particularly those of us who treat these conditions more or less scientifically.

You can say all you please about preferring to be "practical," and about not gaining much from scientific work, but we do gain inestimably by a thorough knowledge of scientific procedures, and I am speaking from my own experience, and from observation of the work of others who fill all sorts of these teeth as they come to them, by a slower method, and who do not have subsequent serious developments, such as soreness, as indicated in the letter opened by the secretary, and the loss of teeth as indicated by the essayist.

I do believe, however, that there are some cases where this method can be employed with success. Perhaps Dr. Kells' judgment has as much to do with his success as anything, but doubtless in most cases nature, that grand restorer, comes to his rescue.

In conclusion, I would not feel loyal to the dentists of Chicago, or to the reputation which we enjoy among our confreres outside of this city, if I did not challenge the statements of Dr. Lind, that he always fills root canals immediately, without drying them, or without removing the leathery decay, and that his patients do not have any trouble. The former accounts for the development of many abscesses, and the latter is one reason why so many fillings drop out.

I would like to go further into this subject, but know Dr. Kells wants to get back at us.

Dr. Kells (closing the discussion):

I am certainly among friends this evening, and I pity the condition of affairs if I had not been. (Laughter.)

There has been a great deal said about the scientific part of this subject on which I did not touch. I gave you a record of facts from my cases. I told you that Dr. Richmond, who followed this method of practice, demonstrated it successfully. Dr. Richmond did it, and hundreds of dentists are doing it today. We have been told that it is unscientific and absolutely impossible, but it is done. Once upon a time there was a man put in jail, and he sent for his lawyer, and his lawyer said that "they have no right to have you in jail. They cannot keep you in jail." The man replied, "Yes, but I am here and can't get out." That is just the position of some of you gentlemen. You say that this method of practice is unscientific and absolutely impossible, yet it is being practiced every day by a number of dentists. Of course, if there are men here who can insert gold fillings in the cavities of teeth as they come, and have no failures, and these failures last for eternity, those men are merely wasting their time in attending dental meetings. Any man who meets with 100 per cent of successes in filling root canals as they come is wasting his time in attending a meeting like this. But are there any such men who meet with 100 per cent of successes? I do not. Out of ninety-four root canals that were filled immediately during a period of two years, two were not seen again, and it is possible that those two went to some other dentist the next day and had the tooth extracted. As a rule, the cases that give trouble, give trouble immediately. My instructions to patients are: If this tooth troubles you, it will give you trouble within forty-eight hours, usually within twenty-four. As a rule, if these teeth are comfortable for forty-eight hours, I expect no further trouble from them.

Dr. Drake:

If a tooth gives trouble, do you remove the root filling?

Dr. Kells:

Never. Why should I? I have filled the root to the best of my ability with a material that I cannot remove without difficulty, and if it should give trouble, it is not because of something wrong inside the tooth; it is because I have set up an irritation beyond, and the treatment is not to remove the filling and refill the tooth, but to treat it from the other end.

It has been stated that we will not be apt to have trouble if we drill into a tooth that is devitalized, but otherwise sound. Those are the teeth that give me most trouble.

Teeth with sinuses are the easiest of all to treat. They cannot give trouble because there is an opening from the end of the root. Teeth with blind abscesses are more liable to give trouble.

There is nothing new in the method of treatment I have described to you. It was Cassius M. Richmond who taught me this method. He showed that it is possible to practice this method with great success, and I and others have followed in his footsteps.

Dr. Woolley:

Does it necessarily follow that if a tooth has been seemingly restored to health, is not sore, and does not cause any pain, there may not be a reflex condition arising from diseases or diseases in other parts of the body, caused by certain irritations around that tooth?

Dr. Kells:

That is possible, but I do not believe it is usually probable. Unless it is a neuralgia the cause of which we cannot locate I do not think any trouble can come from a tooth. I do not know of any such cases, nor have I had such.

Dr. Woolley:

Would your work be thorough and complete if you did not examine the physical condition of your patient after these teeth have been filled?

Dr. Kells:

It depends upon what you mean. Usually—yes.

Turning to my text, if you have no trouble you need not change your method of practice. But if, on the contrary, you sometimes lose a tooth or have trouble with the teeth that you have been treating, using up time and money, you will save time by adopting this method.

Let me say a word or two with reference to climatic conditions. I do not believe that they have anything to do with the use of carbolic acid in the South. I have seen more trouble in the limited time I have visited Chicago, New York and Boston than I have seen in my entire practice. Once when I came to Chicago one of your leading dental surgeons showed me a case in his chair the result of extraction of a lower tooth. I never saw anything like it in the South. I have had two patients whom I have treated for five years, having filled teeth of all kinds, and had had no unusual trouble, go to New York City and live, and in a few years they developed the worst kind of abscesses. They would not have had the trouble with their teeth in the South. I know that is so. You only have to judge by the records I have given you. They are not theories.

There is one thing you have not referred to, and that is, "What were the roots filled with?" I believe that has a great deal to do with the success of immediate root filling, and I believe that oxychloride of zinc put in these root canals does a good deal of the work.

The theory of Richmond is that if you remove the cause of the trouble, and fill the root canal properly, nature will take care of the rest, and this is the accepted doctrine of those who follow in his footsteps.

I thank you very much for the pleasant evening you have given me. (Applause.)

THE SOUTHERN WISCONSIN DENTAL ASSOCIATION, MAY 30 AND 31, 1906.

DISCUSSION OF DR. CLACK'S PAPER, "WHY I MAKE CONTACT POINTS."

DR. B. G. MAERCKLEIN:

I desire to compliment Dr. Clack upon the position that he has taken. I can most heartily coincide with his views. In fact, I have been one of the advocates of that method before our state society for the last twenty-five years. I maintained twenty-five years ago that in order to preserve teeth it was not alone necessary to fill them, but to improve their conditions. I maintained that a well filled tooth under improved conditions was superior to a normally healthy tooth in poor condition or in bad environments, and that a filled tooth would last longer than a normally healthy tooth had lasted in unfavorable environments, and that in order to preserve the teeth and gums in a healthy condition, the teeth must be kept separated, and that I said could only be done by making contact points to have them touch. Some one said that I must be of Irish origin to have teeth separated and have them touch. Now that point has perhaps been gone over a great many times, and possibly by no one more thoroughly at least in the years gone by than by the late Dr. Marshall H. Webb. I can remember the time when he was the only one in the profession that stood out single-handed for restoration of contour. When Black and Foster and the various ones were making self-cleansing spaces by cutting away the teeth with the Arthur disks, he was making self-cleansing spaces by building up the natural contour, separating the teeth first by wedging, slow or quick, and restoring the contact points. He constantly referred to the fact that the fillings must be brought out so that they could easily be cleansed and come out to the brush line, and that the friction of food, as he put it, on those surfaces, should keep the teeth perfectly clean, and that the gums under those conditions could only remain healthy. I am more than pleased to see Dr. Clack go into this thing in detail, and he has brought out one phase in his paper which has not been formerly sufficiently emphasized, the protection of the gum. The matter of cleansing of the teeth has perhaps been gone over a good many times, but the protection of the gum by contact points has never been brought out, at least to my knowledge, as perfectly as it has in his paper. Then the normal restoration of the gum of its own accord under this protection I have never heard given in this way before, and I think we all ought to be exceedingly grateful to Dr. Clack for having called attention to it.

Dr. Ames, of Chicago:

I can not pass without commenting on what Dr. Clack has brought out and what he is contending for. We all know what dire results can result from having such spaces present as are illustrated in these diagrams. The most that I want to say is what Dr. Clack possibly said before I came in, but what I have seen omitted oftentimes in discussing this very point, the necessity for correcting the occlusion or adapting the occlusion to the changed conditions brought about by the wedging which has been spoken of tonight, and holding teeth in proper position by making ultra contours. In doing this you necessarily break up the occlusion of these teeth with those of the opposite jaw; and while Dr. Clack may have mentioned that when I was not here, I have heard Dr. Wedelstaedt and Dr. Black go to great lengths in contending for this protection of the gum from giving these contact points, and yet failing to mention what possibly anybody would recognize as necessary, but it would seem to be as well to be mentioned, that we must so change the occlusion of the teeth in the opposite jaw that these teeth may remain in the position in which they have been placed. If these contact points are made and the teeth changed in their position and yet the occlusion is left so that there is a tendency to still force a space, we have only half accomplished the purpose. Half the question it seems to me is the proper grinding of the cusps to prevent the tendency to create a space partly as bad as previously existed.

Dr. Rodolph:

In regard to those contact points, after you have made them, unless you make them perhaps of 22 karat gold or gold inlay, they are liable to wear off, and I believe that there's no material in the world that is compatible with the gum tissues and which will maintain its contact point like a porcelain inlay.

Dr. Hart:

I am very much delighted with the paper and the models that have been shown. There is great laxity in the manner in which we go about beginning the treatment of teeth. We fill certain teeth and have very little regard for the other teeth or the denture as a whole, and a good deal of our really bad work results from that. But where the teeth are considered as Dr. Clack considers them, that is not apt to result. The restoration of course I would prefer to do with inlays in cases of this kind, having the contact points possibly a little bit larger, and then if the gums are brushed with a stiff brush, properly, the restoration will be fairly rapid and will be permanent. The brushing of the teeth, especially after they have got in this condition as described by the illustrations, is one of the main factors, I believe, in the preservation of the teeth and comfort afterward.

Dr. P. B. Wright:

The point was raised about the contact point wearing away between the teeth. I think it was Dr. C. N. Johnson who some time ago advocated in these cases embedding an iridio-platinum post horizontally to restore the lost contact point, and securing this post in the filling by malleting the gold over it. He found that was practicably indestructible, and made a very good contact point.

Dr. Perry:

I did not suppose that the desirability of making a contact point was ever a point at issue. These cases which the doctor has so beautifully illustrated here in practice are perhaps the most perplexing propositions that come to us. My practice has been to restore them with gold inlays, never having attempted as extensive a restoration of the contact point as illustrated on this paper here with gold foil. I think the paper is absolutely orthodox. In that regard it is not a right good paper. A right good paper is a paper about which you can find considerable fault, and then the discussion takes place and there follows a discussion of the discussion, and therefore we have the expression of a great number. The discussion is the best part of it as a rule, because it is the consensus of opinion. There is one thing that strikes me forcibly, and that is the work of the G. V. Black Club in this Northwestern section up here; the thoroughness with which they do things. I was not made aware of it until the other night, when Dr. Wedelstaedt was down at Chicago attending a meeting of the graduating exercises of the Chicago College of Dental Surgery.

These men are all gold enthusiasts. Why these restorations can not be made with porcelain inlays or with gold inlays it seems has not occurred to this coterie of gentlemen in the Northwest. If they can mallet it in there and find that a patient survives the operation, why it is all right. But that would be my objection—the method of doing it; the strain upon myself and the patient, of making as large restorations as these with foil. The idea is absolutely sound, that is the restoration of the interproximal space, and the reason given is a good one, namely that we shall have a restoration in health of the soft tissue in the space, which will occur when the crowding of the food against the gum is prevented.

Dr. Clack:

I thank you, gentlemen, for the very kind reception you have given me. I was warned that if I came down here and made any such statements as I had in the outline of my paper, that I would be jumped on and trodden into the earth. I am in pretty good physical condition yet, notwithstanding the fact that I have stood at the chair now something over thirty years, and during the last decade I have stood there from nine to eleven hours a day. If you enjoy your work, if you believe that the work you are doing is a benefit to the patient and to the profession, if you work with that end in view, and not for just the amount of dollars that you get, you will find that the work is a great deal easier. It is a labor of love to a very great extent.

When I was a boy at home on the farm my father was a pretty thorough horseman. He used to say "give me a horse that is a good walker and I will guarantee he is good for something else." If you will give me a man that is a good gold operator, I believe I can make something else out of him. I believe that the system of cavity preparation that we have been taught at these clubs is the secret of the success in the making of porcelain inlays by members of the Black Club, for members of the Black Club of St. Paul and of the Wedelsteadt Club of Iowa are making porcelain inlays that will compare very favorably with the men of the East. I was not ashamed of some they made at Buffalo last summer, in comparison with the men of the East. I know this subject has been spoken of and talked over many times. There is very little of this straw but what has been threshed over and over. But there are men in the state of Wisconsin today who are not making these restorations, and until every reputable dentist in the states of Iowa, Minnesota and Wisconsin is making an attempt to restore the human teeth to their original or normal conditions, our work is not over. You may get tired of hearing this method discussed, but I tell you, gentlemen, you must come to this before you are going to do work that will give you satisfaction when you see it ten, fifteen and twenty years afterward. I believe firmly that fillings made in the proximal surfaces of the human teeth without contact, or with gingival or marginal contact will fail —well, there is only one way for the patient to escape, and that is to die. As I said before, until that day comes, it is our duty on every possible occasion to impress on these young men the importance of these operations. It is hardly necessary for me to answer two of the points here, and still I have just touched them. The criticism made that these contact points are too small. If you will listen to what Dr. Black says in the April *Cosmos,* in answer to a criticism of the smallness of the contact point: "The point of criticism that struck me most favorably was the criticism as to the smallness of the contact point. There are occasional cases coming before us, and this looks as if it might be one of them, where the restoration of the inter-proximal gum tissues seem to depend materially upon the smallness of the contact."

I have had experience in this matter. I used to make those. I was afraid to draw them down fine enough at first, and I found the gum tissue was not improving in the way I wanted it. Instead of being restored hard, firm, pink gum tissue, I had a kind of a vascular restoration there, that would bleed at every touch. After hearing another of Dr. Black's talks I went home and called in a number of those patients and I reduced the diameter of those contact points and I so shaped those embrasures that the food would glide through. Some of those cases are the cases that I have shown you tonight, where the change was for the better immediately. The irido-platinum wire is a very good thing to use in a great many of those cases where you are afraid to attempt the restoration with gold foil. Of course, it will be a little unsightly when you are looking at it, if the fillings are made of gold. It is not quite the color of it. But with amalgam you may use it to good advantage. If I had thought it worth while a patient is at Wauwatosa, who has one of those contact points made with an irido-platinum wire that has been in place five years. I saw it yesterday, and it is as perfect a contact point as I ever made in my life. But don't be afraid of these contact points of gold. If you use annealed gold and condense it properly you need not have much fear of your contact points. Latterly I am making a great many of those contact points with gold and platinum in rolls, and you will find that very hard indeed. I think almost equal to the irido-platinum wire.

Gentlemen, I wish you to all understand that I revere the name of Webb and many of those other old masters; men who blazed out the trail; men who made it possible for others to follow that trail along the little tow-path that they made, lay out a highway that is wide enough and smooth enough so that every dentist who has ordinary ability can follow those methods. It detracts nothing from Dr. Webb's life work when we give to Dr. Black the credit for systematizing—don't understand us to say that he made the world and all that dwells therein; we never thought that for an instant; but we believe that he is the first man to lay down rules of practice and methods that make it possible for the wayfaring man to follow.

Dr. Brown:

I think the greatest benefit of all is that these men are working along the line that promises to give the greatest rest to the jaw. They give patients greater comfort than by any other method that I know of, until the question of inlays becomes better understood.

THE MINNESOTA STATE DENTAL ASSOCIATION.

DISCUSSION OF THE PAPER BY J. W. WASSALL, D. D. S., CHICAGO, ENTITLED, "A METHOD OF ANCHORING BRIDGES BY SWAGED INLAY ABUTMENTS."

Dr. Walter N. Murray:

I had the misfortune not to hear the first part of the paper and I do not know how much was read that I did not hear. The paper is a little different from what I expected to hear from the title given in the program. I supposed it would be a hollow inlay attachment for bridges, but from what I have heard of the paper it would seem that we have a solid inlay, and so far as my experience goes I cannot help but coincide with the writer of the paper. I know Dr. Wassall quite well and am familiar with his methods, and I must say I think the society is exceedingly fortunate in getting the doctor here to present this subject, since I believe he has made this a special study and has spent fully as much time upon it as any one in the profession. The one thing I know about this lingual attachment is that the finished product which we get by imparting that shoulder, extending from the mesial to the distal grooves upon the lingual part of the tooth, will certainly give a margin there that will correspond to a well adapted filling, if the ideas of the essayist are carried out to a nicety. I have had some experience in this work, and I must say that some things that may seem easy to Dr. Wassall the profession generally will find to be very difficult until they have had experience in this work. We sometimes hear men of the ability of Dr. Wassall and of the experience he has had state these things and they appear quite easy of manipulation, and they are with sufficient experience, but with the experience we have had with the older methods when we try something like this we become completely disgusted and throw it aside, which we should not do, since it will take us some time to perfect ourselves in any given method to carry it out successfully. I can say that the lingual crown shown by Dr. Wassall, the inlay crown as I might call it, is certainly something new to me, and I think is an advance over the older methods of crowning or making attachments. Some might say that it increases the difficulty, but I can readily see how it would simplify the procedure if we become familiar with the method.

DR. MARSTON:

Will the doctor kindly explain to us where he puts his solder?

DR. PARROTT:

I would like to ask the doctor if he has not had trouble with the gingival margin, with the enamel breaking away?

DR. WASSALL:

The matrix has a margin extended beyond where the thicker platinum comes. All you have to do is to put a little bit of solder on the margin, and it draws entirely in. There are usually slits made in the thicker platinum and the solder runs through very easily. It is simply a laboratory question.

The gentleman on my left wonders if there is no danger to this section of enamel that is left. There is never any force brought to bear on the enamel after the crown is on. It is perfectly safe from decay and there is no force to break it off.

DR. PARROTT:

I have noticed the gingival margin in a great many instances and have also noticed where it was not decayed but the enamel was worn down to the dentine.

DR. WASSALL:

Many teeth are subject to erosion or decay, and if it does not occur before it will occur after, and if it does occur you have the conditions indicating an inlay. It will not interfere with the making of an inlay in that locality if that condition should arise.

Dr. C. M. Work, of Iowa:

It certainly gave me great pleasure to hear Dr. Wassall's paper. I believe it is our old friend, Dr. Talbot, who makes crowns with bands which did not come to the gingival margin, and I can see where in a great many cases it is a good thing. Many teeth we have to crown are so decomposed that a great portion of the cavity is below the gingival margin, large buccal cavities, and we find cavities in the lingual surface. But that does not create a necessity for having a band on the gingival. It is rather a greater indication for leaving it off, since we have gone that far it is very hard to get a band, unless you go so much further down that you cut the peridental membrane, and it has been my custom to make porcelain crowns for this kind of teeth.

I enjoyed Dr. Wassall's paper very much, especially that portion in which he spoke of making bridge anchors. It is not an easy thing in my hands to make one properly, but I think with the method he has given us we shall be much better able to carry out the ideas of concealed dentistry, which should be our aim in all of our operations. Too many do not seem to take the idea of display or concealment into consideration.

Dr. Munson:

I can readily see with the adjustment how we can get perfect adaptation in the margin, but when put on the end of the bridge on either of those crowns I would like to know how Dr. Wassall makes up for the contraction in the middle of the bridge. I should think the margin of such an adjustment would be imperfect, due to the contraction of the margin in the bridge. In an individual crown I can see how it would be perfect.

Dr. F. B. Kremer:

I was unfortunate in not hearing Dr. Wassall's paper. I infer from the discussion that has taken place that one of the doctor's ideas is to avoid the use of the band on the crown. I cannot discuss the subject at any length except to say that I would like to shake hands with the doctor on that proposition. My own experience has been very unfavorable, and the irritation from banded crowns is such that I use them with great reluctance.

I think I can say without fear of successful contradiction that

75 per cent of teeth with gold crowns show a diseased and unhealthy condition of the gum margin, and we should welcome any system or method that would do away with the band passing under the gum.

Dr. Walter N. Murray:

At the close of this discussion I would like to ask Dr. Wassall a question. Cutting off the tooth as indicated is an exceedingly difficult operation. It is one that requires more than ordinary skill, and I would like to ask the doctor to give his method for cutting teeth for that kind of crown.

Dr. W. M. Colleran, of La Crosse, Wis.:

I agree with Dr. Wassall in doing away with the band, especially under the gingival margin. In most cases pyorrhea follows their use, and his method of applying the gold inlay would appear to obviate the difficulty.

Dr. J. W. Wassall (Essayist):

I ought to offer an apology to Drs. Murray and Jones who were asked to open the discussion of this paper for not sending to them copies of the paper, but I am one of the people who procrastinate and I did not get my paper finished early enough. I even gave it a lift on the train coming here. Dr. Murray thought I was going to describe a method of making a hollow inlay, but if I did I would have to describe something I never made in my life. He also discouraged the method a little bit because he thought it presented too many difficulties for the average dentist. There is no operation so difficult in manipulation as the making of a gold filling. It has been your work for years, for years you have wrestled with the problem of making a perfect gold filling. Every boy who goes to college strives with the subject. You have all had difficult problems in making fillings, but most of you have conquered them. The technique of preparing the tooth for inlay and crown does not present problems as difficult as the other work, and I claim it is much less difficult than to make a gold filling and the results are much better. One gentleman spoke of the waste of tooth substance in preparation and expressed the fear that there would not be enough enamel left for the shoulder. That is a point that was not brought up in my paper. I did say of the attachment that sufficient posts should be used in pulpless cases so that we do not need to use any bands. My paper made an effort at describing the technique of preparing the tooth to show a shoulder. The mesial and distal surfaces and the buccal and lingual surfaces are cut down with thin disks. The corners and angles are cut off with disks in the same way and you finish with smaller stones.

Dr. W. N. Murray:

In that mesial and distal groove, do you use a tapering or a straight bur?

Dr. Wassall:

I begin with a straight and finish with one tapered.

One gentleman asked if I did not have difficulty in making these closely fitting copes on crowns when used in bridge piers in going to place when the bridge was set. Yes, sometimes there is difficulty, but practically it does not amount to much. If a bridge does not go down exactly in place, I have the bridge worn overnight, and it is my rule never to cement a bridge the day it is finished. I have the patient wear it overnight and it is astonishing how much more comfortable it will be and easier to set when the teeth have adjusted themselves.

One member said that 70 per cent of crowns with bands result in a diseased condition. That is probably a good estimate. It seems to me there are no bands that go below the gingival margin that do not produce irritation even if fitted in the most perfect manner. There is a redness where the band goes around the crown and overlaps the tooth, even where it is made correctly where it is in close contact with the tooth, if it is not set in the tooth in the manner described here you have got to have debris and secretions and you are going to have inflammation. It is something we must do away with. I think I have covered all the questions that were asked.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States and its possessions, Cuba, Canada and Mexico. All other countries $1.75 a year.

EDITORIAL.

A DUTY TO THE PROFESSION.

If a careful examination is made of the output of our dental periodical literature it will be noted that most of the writing for the profession is done by a relatively few men compared to the total number of dentists in practice. This is probably true of every profession and yet there is no good reason why such a state of affairs should exist. In dentistry more than in most professions there is so much of a technical nature connected with our every-day work that the ingenuity of the individual is being constantly taxed to meet the demands of special cases as they arise. This develops, or should develop, special thought, and this thought should be so formulated as to be readily put on paper for the benefit of the profession. It has frequently been said that every man who practices dentistry and thus avails himself of the knowledge handed down by his predecessors, or evolved by his cotemporaries, is in duty bound to repay the debt by adding to the sum total of dental knowledge, and to spread this knowledge as widely as possible. If this contention is true, and we think it surely is, then every practitioner owes it to his profession to publish the results of his experience that others may benefit thereby.

It will no longer do for men to shirk behind the excuse of incompetency. All dentists are probably not qualified to write brilliant articles, but any dentist who schools his mind to the task of thinking out vividly and carefully any problem can at least write his thoughts with sufficient clearness to be understood. It is largely a matter of application and concentration. If dentists could only realize that the mere attempt to place their ideas on paper tends to clarify those ideas and make them more vivid in the mind of the writer, they would surely exhibit a greater willingness to apply themselves in this direction. It is undeniably true that the man who gets the greatest benefit from a paper is the one who writes it. This is particularly true of any paper written on a technical topic, or where original research work is necessary to bring out the salient features of the subject.

It would be well worth while for every dentist to form the habit of seating himself at his desk and describing any particular operation, or method, or line of practice which most appeals to him, even though he never intends publishing what he writes. This kind of training will develop concentration of thought and this is really the most essential thing in preparing papers which are worthy of publication. The literature of the profession should be represented by a larger list of writers and this can readily be done if more men apply themselves to the task, and bring out the latent talent which is too frequently allowed to remain dormant.

THE EDITOR'S DESK.

ANOTHER VACATION.

[Continued from December DENTAL REVIEW.]

THE STORM AT ESTHER ISLAND.

I have always been fascinated with storms and while on the island we had a beauty. It came up from Parry Sound way and told us when it was coming. There was no mistaking the intentions of that storm; it meant to shake things up some and it did. First it formed with a terrific black cloud, through which the white streaks of lightning shot like the tongue of an angry adder. The trees began to grow uneasy and Sailor, the dog, skulked under cover. Leaves and other small objects went scurrying over the surface of the ground and the water took on an agitated, apprehensive appearance. Suddenly the rain came down and with it an increase of wind, blowing the mist across the surface of the bay like steam. The tempest roared louder every instant, and the spectacle became magnificent. We were watching it from the front door of the cottage, when all at once the wind changed and swept the porch clear of everything. We slammed the door and there was nothing but a blur in front of the windows. We could not see a foot into the storm, nor could we hear each other speak. Suddenly there was a ripping, tearing crash and heavy jar, followed by two bedraggled forms bursting into the door. There had been a tent a few feet from the cottage, and between the two stood a couple of pine trees. Lorne and Jimmie always slept in the tent, and had taken to it when the storm came. One side of the tent was roped to a crosspiece nailed to the pines, and when the wind veered it swept the trees with a smash to the ground, carrying the tent with them. The boys crawled through a torn place in the canvas, and, almost blinded by the deluge, dashed into the cottage. It was a miracle they were not injured, and it was fortunate the cottage had a foundation of rock, else it also would have been swept away.

When the storm cleared so that we could see the water, it didn't look like the same bay. The surface was lashed into a foaming frenzy, as if it were fighting back the fury of the elements above it. I wouldn't have tackled that water then in any kind of a craft, even with the promise that I could catch the best black bass in it. As soon as we were able to leave the cottage we investigated the havoc and found that no fewer than nine beautiful pine trees had been leveled in the immediate vicinity. The marvel was that none of them had struck the cottage. Fortunately the "Emerson" rode the storm uninjured, though she broke the chain which held her bow, and was prevented from pounding herself only by the stout stern rope.

The tent was soon righted again, the wreckage cleared, and we were serene as ever. But I shall never forget the grandeur of that storm. It was the greatest display of energy while it lasted that I have ever witnessed, and short of a genuine cyclone it could not have been beaten for freakiness.

HOMEWARD FROM ESTHER ISLAND.

Through the generous hospitality of the doctor and his good wife we had far exceeded our intended stay at the island, but at last the necessity of getting at my mail forced us to say goodby. I shall always hold the fondest recollections of that beautiful Esther Isle, up in the Georgian Bay, and of the kindness and never-ceasing courtesies of the host and hostess of "The Pines." One afternoon the steamer "Mazeppa," from Pointe au Baril, called to take us to Parry Sound, and that night we went on board the steamer "City of Toronto," lying at the dock ready to start early the following morning for Penetanguishene, down on the southeast corner of Georgian Bay. Before leaving Esther Island the Collector and I had gone to the dock and caught six fine bass, which Jimmie cleaned and packed in ice for us. These we took to our summer home at Blackwater, whither we were bound, and they proved a rare treat.

"Alexanders" on Wawatesi Island.

The trip from Parry Sound to Penetanguishene is simply indescribable. The steamer weaves in and out among the islands in a bewildering maze of channels. In some places she runs so near the shore that one can almost reach out one's hand from the deck and touch the rock, while in others the shoals force her to sweep away out around a headland as if she were about to double on her course.

And the profusion of islands! It is reported that there are on record more than 33,000 islands along this eastern shore of the Georgian Bay, and they don't know how many more got away. What a paradise it is!

I met an old friend of mine on the boat, Mr. John Birnie, K. C., of Collingwood, who was attending the meeting of the fishery commission at Parry Sound, and he informed me that there was a strong movement on foot to make this region a government fish preserve, prohibiting nets and protecting the game fish. If this is done there will be no other spot in the world to equal it. The idea is then to charge all—residents and non-residents—a small license fee for rod fishing, and to use the proceeds for properly patroling the waters and enforcing the law. My prediction is that if this plan is carried through it will bring thousands of summer residents to this region where today there are hundreds.

We strike a strange medley of names on our way down—"Rose Point," "Sans Souci," "Copper Head," "Yank Kanuck," "Somerset Island," "Wawatesi (or Firefly) Island," "Go Home Bay," "Minnicoganashene," and "Penetanguishene." We reach this latter port about noon and take the stage to Midland, three miles distant, where we have dinner. That afternoon we board a train for Blackwater and arrive here at 7 p. m.

It has been a most enjoyable trip from Chicago, varied in so many ways and full of incident, but after all the real simon-pure comfort is attained when the old summer home is reached. It seems to me there is no other spot on earth quite like it. Blackwater is a little less than three miles from the place where I was born, and the dear old grandmother is still living in the identical house. What a troop of memories come upon a man as he roams about the fields he used to scamper over as a boy! The first place I drive to after reaching Blackwater is always to grandmother's. I love to loiter around the yard and listen to "the music of the needles of the pines" which stand out by the front gate. I don't suppose it is a very pretty place, but the other day as I wandered down along the old zigzag "stake and rider" fence toward the bush at the lower end of the big field I thought it was about the serenest spot ever spread out for the eye of man. But these reflections are of interest only to the one who writes them, and have no place here.

Blackwater upon one side has the clang and bang and fever of many railroad trains, upon the other primeval nature. A winding river laps the lower end of the lot where the house stands, and this river is beautiful in the extreme. It is shaded on either side by overhanging bushes, and runs in so many directions that it would make a compass dizzy to follow it. I believe that the geographical name of this river is the "Beaver River," but we simply call it "The Creek."

A Bit of Beaver River.

And it is to this place that I come every summer and renew my youth, getting back to the ground again, breathing an air purified by filtering through the leaves and limbs of trees, listening to the songs of birds, watching the waving fields of golden grain, and sleeping to the hum of insects out in the tall grass by the open window.

THE END.

BOOK REVIEWS.

Atlas and Text-book of Dentistry including diseases of the mouth. By Gustav Preiswerk, M. D., Ph. D., of the University of Basel. Authorized translation from the German. Edited by George W. Warren, A. M., D. D. S., Professor of Principles and Practice of Operative Dentistry, Pennsylvania College of Dental Surgery. With 103 colored figures on 44 plates and 152 text-illustrations. 343 pages. Price, $3.50 net. Published by W. B. Saunders Company, Philadelphia and London, 1906.

Nowhere in dental literature have we ever seen illustrations which can begin to compare with the exquisite colored plates produced in this volume. The whole work is enlivened by these reproductions in various colors, making altogether a most superb and attractive book. We have previously remarked that no single volume of this size can treat adequately on the entire subject of dentistry, and this work naturally suffers from the limitations of such an attempt so far as the text is concerned. This does not imply that the book does not contain many excellent ideas, but the crowning triumph of the book relates to the altogether satisfactory and really magnificent character of the illustrative work. In this one respect alone it is well worth the price of the volume.

Lecture Notes on Chemistry for Dental Students including dental chemistry of alloys, amalgams, etc. Such portions of organic and physiological chemistry as have practical bearing on the subject of dentistry. An inorganic qualitative analysis with specially adapted blowpipe and microscopical tests, and the chemical examination of urine and saliva. By H. Carlton Smith, Ph. G., Austin Teaching Fellow in Dental Chemistry and Lecturer on Physiological Chemistry at Harvard University Dental School. 8vo, viii + 273 pages, 28 figures, 9 half-tone plates. Cloth, $2.50. New York: John Wiley & Sons. London: Chapman & Hall, Limited, 1906.

This is a very useful and practical addition to the literature of dental chemistry. The book follows in arrangement the course of lectures given by the author in his college work and seems to have been well planned and the methods simplified to bring it within the range of student requirements.

DOMESTIC CORRESPONDENCE.

CHICAGO, December 3, 1906.

Dr. C. N. Johnson, Editor of THE DENTAL REVIEW, *Chicago, Ill.:*

DEAR DOCTOR—On reading over my discussion, in November DENTAL REVIEW, I have discovered some errors. On page 1158 and 18th line you have "uric oxide," instead of "ferric oxide," and on page 1160, line 6, you have "H20" instead of "H_2 O" and on the last line, you have "3H 20" instead of "$3H_2$ O."

Yours truly,

J. E. HINKINS.

NEW YORK LETTER.

To the Editor of THE DENTAL REVIEW:

The Thirty-eighth Anniversary Meeting of the First District Dental Society of the State of New York occurred December 11 and 12. As usual of late years the Second District (Brooklyn) Society merged its meeting for December with the First District. The program presented a list of sixty-seven clinicians of whom nearly all were present and did that which they promised.

The evening session, Wednesday, December 12, was held at the Academy of Medicine, 17 West Forty-third street, in the large auditorium, which was filled to overflowing to hear Dr. George V. I. Brown of Milwaukee, Wis., on "Clinical Results in the Surgical Treatment of Hare Lip and Cleft Palate."

At the clinics, Dr. Brown had been presenting certain patients to show results, and exhibited photographs, etc., as had also Dr. Truman W. Brophy, who was to open the discussion. Consequently nearly all present at the evening meeting were much interested in what they should hear.

Dr. Brown went into the etiology of oval and facial deformities to quite a degree. He spoke of the evidence of facial disfigurement, great palatal deformity and hopelessly defective speech, due to imperfect results of early treatment or the neglect of these patients in early life, as being accountable for the marked awakening of interest of surgeons in different parts of the world in an endeavor to accomplish something for these unfortunates.

He classified cases with due regard to both age and character of deformity. Described the differences between early and adult treatment, gave some reasons why surgeons, though otherwise skillful, have failed in these cases. He spoke of ideal and practical speech results and of the principles on which these depend. Described in detail some of the benefits which may be derived from surgical closures which are not possible through any kind of artificial substitutes.

A great many stereopticon views were shown illustrating the "before and after" conditions in many cases. These presented all degrees of deformity and at different ages. Some of these showed clearly the results of imperfect surgical work, the possibility of its correction later, and the benefit to be derived through correct treatment.

He also presented phonographic records of "before and after" speech results.

Dr. Truman W. Brophy opened the discussion with a somewhat hurried review of the paper, differing radically on some points. He claimed there was *no* deficiency in the *quantity* of tissue in any given case. In this position he admitted he was opposed to the essayist and many eminent men. He claimed that there was ample material, but simply not united. "Nature does not fail to supply the material but does fail to bring the parts together." He also presented a number of slides illustrating his position. The slides presented by both Dr. Brown and Dr. Brophy deserve more than passing mention. They were remarkable from every point of view.

On the ground that the essayist had argued against his—Dr. Brophy's—operation, he defended it strongly. Said that sick children should *not* be operated upon but should be made healthy and well first.

He presented a patient, a girl of nine or ten years, upon whom he operated when she was but eleven months old. He also presented a patient who was an adult when the operation was performed. In both cases results were remarkable beyond description. In his references to Dr. Norman W. Kingsley's work the audience was aroused to much enthusiasm. He pointed to bust of Dr. Louis Sayre, and said that what he had accomplished was the result of what Dr. Sayre had said about the inability to help this class of unfortunates.

Dr. Robert H. M. Dawbarn of New York followed in the discussion. He thought that the loss of blood ought not be minimized as had been done. He was opposed to the very early operation—thought that at a later age there was greater safety, and therefore better results. He spoke of the administration of chloroform to a *sleeping* child, thus avoiding the shock and excitement otherwise attendant. Described the method of sequestration of blood in lower extremities in order that a bloodless operation might be had. Agreed very decidedly with previous speakers as to the value of singing lesson for those for whom this operation had been performed. He presented a lad of some ten or twelve years on whom he had operated for *double* hare-lip as well as cleft palate. The operation in the palatal region was not entirely successful, he would have to perform another, later, to secure complete closure. Yet the lad was able to go to school and spoke on the platform very clearly and distinctly. He emphatically said he thought much good might be done if we would show our failures instead of our successes.

Dr. F. D. Weisse followed with some remarks concerning condition of affairs in the '60's and early '70's, when obturators were being made and comparing matters then and now. Complimented Dr. Brophy on his great achievements. Personally he would advise an early operation.

Dr. Schamberg of New York complimented both Drs. Brown and Brophy as working from different standpoints to the same end.

Dr. King of Brooklyn spoke of the mortality in infants being small, because there was little or no shock. Said that after the parts were brought together it was far easier to nourish the child than before.

Dr. McClellan of Brooklyn opposed Dr. Dawbarn regarding hemorrhage, claiming there was almost none.

Dr. Brown in closing presented a boy about fourteen years of age in whose case in pre-natal existence a hairlip had begun, but nature had repaired it though not so successfully as a surgeon would have done. For this lad Dr. Brown had closed the palate, making a very successful case. He also presented a babe, one month old, for whom he had begun operations by placing a strip of surgeon's adhesive plaster on the cheeks and upper lip, drawing the hairlip closer, and giving the muscles something to do toward helping affairs, and even in this little one the nostrils showed marked advantage from the use of this strip.

At the November meeting of the New York Odontological Society there was some little preliminary business—in the election of Dr. Wm. Jarvie and Dr. A. L. Northrup to honorary membership. Both these gentlemen have just retired from the active practice of dentistry. It seems scarcely necessary to speak of their world-wide fame in our profession. Each has been highly honored, both at home and abroad.

Banquets have been given them on their retirement, and as they had resigned as active members, it was very fitting that they should be elected honorary members. Eulogistic resolutions were read by the two committees appointed for that purpose and these resolutions ordered spread upon the minutes and a copy sent to both gentlemen.

The essayist of the evening, Dr. Frederick C. Kemple, of New York, read a paper entitled, "Orthodontia As a Prophylactic Measure," which was very well received. It had the great merit of being short, terse, and right to the point.

Doctor Kemple's paper did not bring out anything new, but emphasized many things already known, showing how much more easily the mouth with the teeth in proper occlusion and with normal interdental spaces could be kept clean, than one where the teeth crowd and overlap. He spoke of the close relationship between orthodontia and prophylaxis. Said that the great result of orthodontic work was to increase the patient's ability to resist disease. As dentists we should strive to secure perfect cleanliness of the oral cavity. This can be secured only by mutual work on the part of both operator and patient. Spoke of the necessity for thorough mechanical cleansing, referring to the statements of Prof. W. D. Miller on that subject and the work of Dr. D. D. Smith, of Philadelphia, and how the constricted crowded condition of irregular teeth prevents such mechanical work. Referred to the relation of malocclusion to pyorrhea alveolaris and quoted from many regarding faulty occlusion as a contributory cause of pyorrhea.

The New York Institute of Stomatology held its annual meeting on December 4th at its usual place of meeting, the Chelsea, in West Twenty-third street. As this is a close corporation, only the twenty-five active members met, and transacted the usual business of an annual meeting. The election of officers resulted as follows:

President, S. E. Davenport; vice-president, Chas. O. Kimball; recording secretary, Arthur H. Merritt; corresponding secretary, Chas. C. Linton; treasurer, J. Mogan Howe; editor, F. L. Bogue; curator, to be named by the board of directors; member of executive committee, Stuart H. McNaughton; chairman of the executive committee, Edward A. Bogue.

The society was reported in a highly flourishing financial condition. Sincerely yours,

"THE BOROUGHS."

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Extraction of Pulps After Local Anesthesia:—With regard to the extraction of pulps after local anesthesia I have sometimes found there would be secondary hemorrhage perhaps ten, twelve or even twenty-four hours later, and even where a tooth was packed with cotton, secondary hemorrhage produced considerable pain and a great deal of annoyance.—*W. M. Cooper, Frankfort, Germany.*

Preparing Sensitive Cavities:—A comparatively painless method of cutting away a large body of sensitive dentine is to have the stones or burs run in water. I think about the most painful thing which you can do to a patient is to run a bur at a high speed in a dry cavity. I am able to do this so-called heroic cutting with the stones run in water, so that the water is almost a running stream upon the bur or stone, and it can be run at a high rate of speed.—*E. J. Perry, Chicago.*

Sterilizing Water:—If you will take a copper boiler or pot and have the interior thoroughly polished and leave the water standing in contact with this surface for three and one-half hours, the various substances floating and dissolved in the water will be precipitated in consequence of the solution of a small portion of the polished copper surface. This will not affect the taste, but the water will be sterilized. If the water is then filtered it is ready for use.—*A. W. Harlan, New York, N. Y.*

Treatment of Sensitive Dentine:—There is one point in the treatment of sensitive dentine which may be considered as definitely established, namely, that by the use of sharp instruments, cutting with the least possible amount of pressure and consequent development of heat, and by thoroughly drying the tissue to be operated upon with warm air in connection with absolute alcohol, we are able to greatly reduce the sensitiveness of the dentine in the majority of cases which come under our treatment.—*W. D. Miller, Berlin, Germany.*

Pure Food:—We are having efforts made throughout the country at present for pure food laws. Now, it matters not as to the condition of the food when it enters the mouth of many, it becomes a most polluted mass ere it enters the stomach, for many thousands of individuals are going about today with nothing but broken-down roots in their mouths, which serve to retain much food. This ferments from one meal to the next, and is carried into the stomach, and results in untold injury, for a man cannot feel better than his stomach, a trite but true proverb.—*C. E. Byington, Harrisburg, Ill.*

Method of Setting an Inlay:—Instead of using direct pressure, as so many dentists do when they wedge an inlay to place, I put the inlay in position and draw a wide piece of tape over it, as I would in polishing a gold filling with a polisher. This keeps teetering the inlay from one end to the other, and if you keep going over it you will be surprised how much closer the inlay will become seated than if you use any amount of direct pressure. Direct pressure on the inlay will not squeeze out the cement, because the particles of cement rest on top of each other and cannot get away. I use a piece of tape twice the width of the inlay.—*W. H. Taggart, Chicago.*

Hollow Inlays:—Where I use low fusing porcelain I have gotten into the habit of laying on the inside of the matrix little pellets of gold of proper size, and placed where it would serve to help retain the filling. I am in the habit of varnishing the inlay with shellac, that there will be no adhesion of the gold to the porcelain so as to change its form. After the inlay is fused the pellets may be picked out, leaving cavities into which the cement will flow, and it gives that much of an additional hold to it. For high fusing I have used plumbago—ordinary lead pencil. It will stand the heat and I have observed no change in the shade from the use of it.—*C. B. Rohland, Alton, Ill.*

Adjustment of the Rubber Dam:—I have very little trouble with my patients in the adjustment of the rubber dam. If I were a patient I would kick with both feet if a dentist adjusted a rubber dam as I have seen it adjusted at many meetings. Only a year or two ago I saw a patient in a chair at a clinic with the rubber dam adjusted and the ten anterior teeth ligated to make an operation in a central incisor. Now we believe in placing the dam over a sufficient number of teeth to gain access readily, but it is seldom necessary to ligate more than the tooth you operate on, unless it may be cavities in the proximal surfaces, where you have to step over to the other tooth.—*William Clack, Clear Lake, Iowa.*

Care of the Eyes:—The *use of glasses* is an important matter to the dentist. We often hear a man boast of his good *distant* vision. It so happens, however, that it is the worst possible kind of sight that a man can have if he is obliged all day long to do near work. The fact is that a slight degree of near-sightedness is much preferable than any form of far-sightedness. The dentist's work lies within a range of a meter or two; he is rarely interested in anything more than twenty feet away, and his vision should be adapted to these conditions. If, therefore, he has an appreciable amount of far-sightedness it ought to be neutralized by means of appropriate glasses. —*Casey A. Wood, M. D., D. C. L., Chicago.*

Lancing the Gums:—I am willing to concede that dentition is more generally normal than otherwise and that the more aggravated and serious symptoms are comparatively rarely met with in children otherwise healthy, and who receive proper care and attention as regards food and surroundings, still I believe that dentition is more frequently the cause of minor pathological conditions than is usually supposed and recognizing the serious conditions which may be caused by erupting teeth, I know of no reason for not making the rule to lance in all cases where there is the least possibility or even probability by the pathological conditions manifested, being due to an erupting tooth, no matter what the stage of eruption. By lancing I do not mean scarifying the gums, but deep thorough cutting down to the tooth.—*Edwin A. Geilfuss, Milwaukee, Wis.*

Renoform:—The active principle of renoform is supra-renin, obtained from the supra-renal gland. A very small quantity injected locally contracts the blood vessels and thus, by shutting off the blood supply to the nerves, they lose all power of transmitting sensation. The few minutes needed to induce anesthesia is not lost time, for one can operate much quicker as well as better, if the patient is not suffering and therefore remains quiet. In general I would say that renoform is indicated, first, for extraction of teeth; second, for destroying pulps; third, for painless preparation of all cavities in otherwise sensitive teeth; fourth, for cleansing the roots of diseased teeth where the gum tissue is inflamed and sensitive; fifth, for preparing live teeth for gold crowns, or bridges; sixth, for permitting painless application of the separator.—*Charles P. Haselden, Hamburg, Germany.*

Pin Metal for Crowns or Bridges:—I desire to recall my former too unrestrained commendation of pins containing 20 per cent of iridium for crown and bridge work. Such pins are adequate in many instances, but experience shows that pins containing 30 per cent iridium are usually to be preferred. Laboratory experiment indicates that the latter possesses an elastic limit nearly twice as great as the former. This superiority is of great importance in the case of small or weak roots. Thus far the only objection I have found to 30 per cent platinum-iridium pins is that they can not be hammered or rolled to fit special cases without danger of splitting longitudinally, unless previously annealed at a white heat. I have had pins of this alloy made of various lengths, tapering at the point to correspond in shape with the reamers I ordinarily employ, of two diameters, viz., 14 and 16 American gauge, which seems adequate to almost all cases.—*N. S. Jenkins, Dresden, Germany.*

A Combination Gold and Porcelain Inlay:—Get a perfect model and burnish 1-2000 platinum to fit same. Mix enough Roach moldable porcelain (to the consistency of putty), to give you about the contour wanted, leaving enough room in surface for a layer of Watts' crystal gold, which is anchored in the porcelain by pits drilled after it is set. Anneal gold and with light hand pressure fill pits and build out to contour desired. Take out of model after you are sure the platinum is burnished to margins, paint cavity surface and platinum to the margins of the gold with fine powdered rouge dissolved in alcohol to keep solder from flowing where not desired. Place inlay on asbestos pad, heat up slowly and flow 22k. solder into the Watts' crystal gold. Cover with asbestos so piece will cool slowly. You will find when inlay is cool that you have a perfectly fused porcelain inlay covered with a thin veneer of gold. This is only practicable with large restorations, and the claims for it are: You have the porcelain to protect the pulp from thermal changes and a surface to which the cement will adhere; the gold can be burnished to make a perfect margin, and we have a great saving of gold.—***G. S. Hershey, Michigan City, Ind.***

OBITUARY.

Died—At Asheville, N. C., November 24, 1906, in his fifty-second year, Dr. U. D. Billmeyer, of Chattanooga, Tenn.

Dr. Billmeyer was born and spent his youth in Michigan, was graduated from the State Normal School at Ypsilanti in 1876, and from the College of Dental Surgery of the University of Michigan, in 1880. He was chosen assistant to the professor of operative dentistry in his alma mater, serving with honor and distinction for two years, resigning to seek a warmer climate in search of health.

In 1883 Dr. Billmeyer settled permanently in Chattanooga, Tenn., and became prominently identified with the business and social interests of that city. His sterling qualities as a gentleman, scholar and operator soon attracted to him the best and most cultured portion of the community.

Dr. Billmeyer was one of the most skillful operators in the South, and took a leading position in the dental societies. He was elected president of the Tennessee State Dental Society in 1897, and in 1901 was tendered and accepted the chair of professor of operative dentistry in Vanderbilt

University, which position he was compelled to resign two years later because of poor health. Never robust, and fighting from youth that scourge of the human family, tuberculosis, he finally, in 1904, gave up practice and devoted his time to a vain search for health. Dr. Billmeyer loved his profession and worked always by precept and example to raise it to a higher plane. He was a Knight Templar and a Shriner.

The world has lost a valuable citizen, and the dental profession one of its most brilliant and honorable members. R. M. P.

MEMORANDA.

ONTARIO DENTAL SOCIETY.

The eighteenth annual meeting of the Ontario Dental Society will be held in the college building, Toronto, Ontario, February 25, 26 and 27, 1907.

OHIO STATE DENTAL SOCIETY.

At the forty-first annual meeting of the Ohio State Dental Society held in Columbus, December 4, 5 and 6, 1906, the following officers were elected: President, Dr. H. C. Brown, Columbus; first vice-president, Dr. C. I. Keely; second vice-president, Dr. W. H. Whitslar; treasurer, Dr. Weston A. Price; board of directors for three years, Drs. W. H. Todd, A. O. Ross, W. A. Barber, H. T. Smith.

F. R. Chapman, *Sec'y,*
305 Schultz building, Columbus, Ohio.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next meeting at Iowa City February 6, 7, 8, 9, 1907.

Candidates will be furnished with proper blanks and such other information as is necessary upon application to the secretary.

All applications must be filed with the secretary five days prior to the date of examination.

Address all communications to E. D. Brower, D. D. S., *Sec'y,*
Le Mars, Iowa.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners for examination of candidates for license to practice dentistry in Wisconsin will be held Monday, January 28, 1907, at the Hotel Pfister, Milwaukee, Wis.

Application must be made to the secretary fifteen days before examination. The candidate must be a graduate of a reputable dental college, or have been engaged in the reputable practice of dentistry for four consecutive years, or an apprentice to a reputable dentist for five years.

For further particulars apply to J. J. Wright, *Sec'y,*
1218 Wells building, Milwaukee, Wis.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

The American Dental Society of Europe will hold its next annual meeting in Rome, Italy, at Easter, 1907. A very cordial invitation is extended to members of the profession to be present.

As it is the first meeting of the society in the 'Eternal City," it is hoped it may be the most enjoyable one in its history.

J. W. Gale, *Hon. Sec'y,*
79 Hohenzollern-Ring,
Cologne (Rhine),
Germany.

A CALL FOR AN INTERNATIONAL MASS MEETING OF DENTISTS.

The open letter in the October journals has brought out responses of one purpose, that shows a decided interest in the subject of preventive dentistry. From every point of the compass comes the unanimous concurrence that it will be wise to issue the call. Therefore all dentists are invited to meet Monday January 14, the day previous to the annual meeting of the Odontological Society at the Hotel Knickerbocker, Forty-second street and Broadway, at 9:30 a. m. Please respond in person or by correspondence. Address any of the names in open letter, or Dr. G. Alden Mills,
226 Central Park West, New York.

P. S.—Original articles will be gladly received.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS' MEMORIAL RESOLUTIONS TO DR. C. R. TAYLOR.

Whereas, On roll call at the opening session of the November, 1906, meeting of the Illinois State Board of Dental Examiners, the name of Charles R. Taylor receiving no answering response, makes us pause to pay tribute to his worth and memory. Little did we think at our last parting that at our next meeting our long-time friend and colaborer—strong in all the elements that constitute a lovable man, would be beyond the reach of voice, and his chair stand vacant at our table—reminding us that the strongest ties of friendship must sooner or later be broken, but not forgotten. In token of our affection and appreciation of Dr. Taylor's influence in private and public life for the betterment of all who had the good fortune to know him, it is

Resolved, That a page of our records be set apart, and the sentiments herein expressed, be inscribed thereon.

RECENT PATENTS OF INTEREST TO DENTISTS.

833,883. Forming dental structures. John A. Lentz, Phoenix, Ariz. Ter.
834,515. Artificial denture. Ernest D. R. Garden, Tarrytown, N. Y.
834,676. Dentifrice. Herman C. G. Luyties, St. Louis, Mo.
834,594. Obtunding apparatus. Crittenden Van Wyck, San Francisco, Cal.
834,790. Dental and surgeons' cabinet. Wm. C. Wolford, Confluence, Pa.
834,899. Dental handpiece. Wallace W. Freeman, Norfolk, Va.
835,431. Projector for pathological work. Henry A. Hughes, St. Louis, Mo.
835,432. Rubber dam or bib holder. Henry A. Hughes, St. Louis, Mo.
835,358. Rubber dam adjuster. Thomas F. Kennedy, Janesville, Wis.
835,365. Combined toothbrush and holder. Robert W. Morgan, Youngstown, Ohio.
38,305. Design. Top for powder receptacles. John H. Goss, Waterbury, Conn.
836,001. Dental tool. John E. Argue, Red Lake Falls, Minn.
835,732. Toothbrush holder. William E. Lawrence, Minersville, Pa.
835,861. Tooth powder cup. Israel W. Lyon, Englewood, N. J.
835,709. Toothbrush. Chauncey D. Miller, Poughkeepsie, N. Y.

835,628. Instrument for softening dental trial-plates. Joseph Miller, Bexhill, England.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

THE JAMESTOWN DENTAL CONVENTION.

The Jamestown Dental convention, to be held under the auspices of the Jamestown Exposition Company, the southern branch of the N. D. A., and the Virginia State Dental Association will convene at Norfolk, Va., September 10 to 12, 1907. The Jamestown Exposition Company have appointed the following gentlemen, a committee on organization, to elect officers in advance of the meeting, to appoint all committees, to finance the meeting, to bring it to a successful termination: Drs. Burton Lee Thorpe, chairman, of St. Louis, Mo.; H. Wood Campbell, secretary, Suffolk, Va.; F. W. Stiff, treasurer, Richmond, Va.; R. H. Walker, Norfolk, Va., Thomas P. Hinman, Atlanta, Ga., J. E. Chace, Ocala, Fla., Clarence J. Grieves, Baltimore, Md. The committee on organization have appointed Dr. Clarence J. Grieves, of Baltimore, general chairman of the clinic committee, and supervisor of clinics. A number of well known men will assist him on the general committee. State clinic chairmen have been selected from every state in the Union. The clinics are to be the principal features of the convention. It is expected to bring about the largest and most instructive dental clinics ever held. A surgical clinic will also be held under the supervision of Dr. L. M. Cowardin, of Richmond, Va. The other members of this committee are J. Y. Crawford, Nashville, Tenn., and A. G. Fredricks, New Orleans, La Dr. F. W. Stiff, of Richmond, Va., is general chairman of the membership committee. Assistant state chairmen have been appointed from every state in the Union. Already membership fees are being sent in, and the promise is for the largest gathering of dentists ever held. Only five essays will be read at the convention, one by Prof. W. D. Miller, another by Prof. G. V. Black. The other three by well known southern dentists. Several exhibits of much interest to the profession will be held under the auspices of the convention. Amongst them the dental manufacture exhibit in charge of Dr. John W. Manning, chairman, of Norfolk, Va. A comparative anatomy exhibit in charge of Dr. W. M. Bebb, chairman, of Los Angeles, Cal. This exhibit will consist of 3,000 comparative anatomy specimens, and to these will be added numerous other collections of interest. A dental historical exhibit consisting of ancient instruments, operative and prosthetic work, books and photographs under the chairmanship of Dr. William H. Trueman, of Philadelphia, Pa. The orthodontia exhibit showing a large collection of models, etc., under the chairmanship of Dr. H. E. Kelsey, of Baltimore, Md. The United States Naval dental exhibit showing 3,000 charts of the mouths of midshipmen under the chairmanship of Dr. Richard Grady, the United States naval dental surgeon of Annapolis, Md. The exhibit of the United States Army dental corps under the chairmanship of Dr. John S. Marshall, of San Francisco, Cal., will show the equipment, method of keeping records, etc., used by the dental corps. A full list of the various officers, which are to be elected in advance by the committee on organization at their next meeting in February, 1907, and of the committees will appear in due time in the various dental journals. The committee of organization is expected to select officers in advance in order that the officers may be prepared for their duties before the actual convening of the convention. A cordial invitation is extended to all reputable members of the profession to become members of this convention and assist the committee on organization in bringing about one of the best, if not the best, dental meetings ever held. The exposition itself offers an excellent opportunity for the busy practitioner to take a delightful vacation, see the wonderful historical, naval and military exhibit at the exposition, and also to participate in this meeting. The membership fee, which is $5.00, should be sent to Dr. F. W. Stiff, treasurer, 600 East Grace street, Richmond, Va. For further information address H. W. Campbell, secretary, Suffolk, Va.

THE G. V. BLACK DENTAL CLUB CLINIC.

The Annual Midwinter Clinic of the G. V. Black Dental Club will be held at the Old Capitol building in St. Paul on Tuesday and Wednesday, February 26 and 27, 1907. The clinic committee has prepared the best program possible for it to arrange. The operative clinic and the list of essayists speaks for itself. The list of table clinicians has not been completed, but a special effort is being made to have upon it the names of many men who will give as interesting demonstrations as appear upon other portions of the program. Correspondence with exhibitors leads us to the belief that that which is new will be displayed for those coming from a distance.

Those who are interested in progressive dentistry are most cordially invited to attend our meeting and take part in the discussion of the clinics and the ideas which will be presented by the essayists.

Special railroad rates on all railroads. As there will be other conventions held in St. Paul at the same time it is suggested that arrangements be made in advance for rooms. The Merchants' Hotel and the Ryan Hotel have made a special rate for those attending the meeting. The secretary will gladly reserve rooms for all writing him.

PROGRAM.

TUESDAY, FEBRUARY 26, 10 A. M.

Progressive Clinic.—Gold filling in mesio-occlusal surface of upper first molar and upper bicuspids. 1. Dr. A. C. Cearl, Owatonna, Minn. 2. Dr. F. S. James, Winona, Minn. 3. Dr. J. W. S. Gallagher, Winona, Minn. Dr. William Finn, Cedar Rapids, Iowa, will demonstrate the entire method of procedure as followed by these clinicians, using for this purpose a large wooden tooth, clay, etc.

Progressive Clinic.—Gold filling in mesio-incisial surface of upper cuspid, lateral and central incisors. 4. Dr. G. N. Beemer, Mason City, Iowa. 5. Dr. W. R. Clack, Clear Lake, Iowa. Dr. F. G. Richardson, Mason City, Iowa. 7. F. S. Robinson, Chippewa Falls, Wis., demonstrator.

Progressive Clinic.—Gold filling in mesial or distal surface of upper cuspid, lateral and central incisors. 7. Dr. S. Bond, Anoka, Minn. 8. Dr. A. C. Fawcett, Rochester, Minn. 9. Dr. C. H. Robinson, Wabasha, Minn. Dr. A. M. Lewis, Austin, Minn., demonstrator.

10. Gold filling, occlusal surface of an upper or lower molar, demonstrating use of cohesive and non-cohesive gold.—Dr. W. H. K. Moyer, Little Falls, Minn.

11. Porcelain Demonstration.—Dr. J. O. Wells, Minneapolis, Minn.

12. Amalgam Demonstration.—Dr. G. D. Moyer, Montevideo, Minn.

TUESDAY, FEBRUARY 26, 2 P. M.

First. President's address—Dr. A. C. Searl.

Second. Report of clinics.

Third. Essay, "Points of Contact, Their Use and Abuse."—Dr. W. H. K. Moyer.

Fourth, Essay, "Specific Gravity of Gold Filling."—Dr. K. E. Carlson.

(Dr. Carlson will report the results of some experiments which he has made and is still making.)

TUESDAY EVENING, 8 P. M.

Illustrated lecture by Dr. G. V. Black, Chicago, Ill.

WEDNESDAY, FEBRUARY 27, 9 A. M.

The first three clinics are the same as those which will be made on Tuesday morning.

Progressive Clinic.—1. Dr. C. N. Booth, Cedar Rapids, Iowa. 2. Dr. William Finn, Cedar Rapids, Iowa. 3. Dr. J. V. Conzett, Dubuque, Iowa. Dr. J. W. S. Gallagher, demonstrator.

Progressive Clinic.—4. Dr. J. J. Booth, Marion, Iowa. 5. Dr. T. F. Cooke, Burlington, Iowa. 6. Dr. W. G. Crandall, Spencer, Iowa. Dr. F. S. James, demonstrator.

Progressive Clinic.—7. Dr. S. R. Holden, Duluth, Minn. 8. Dr. A. M. Lewis, Austin, Minn. 9. Dr. F. S. Robinson, Chippewa Falls, Wis. Dr. W. R. Clack, demonstrator.

10. Amalgam Demonstration.—Dr. J. B. Pherrin, Central City, Iowa.
11. Porcelain Demonstration.—Dr. F. S. Yeager, St. Paul, Minn.
12. Gold Inlay.—Dr. C. E. Woodbury, Council Bluffs, Iowa.

WEDNESDAY, 2 P. M.

First. Report of clinic.

Second. Essay, "The Relation of the Dentist to the Public and to His Patients."—Dr. T. F. Cooke, Mediapolis, Iowa.

Third. Essay, "The Treatment of the Teeth of Children."—Dr. C. N. Johnson, Chicago, Ill.

It is an impossibility to give a list of the table clinicians. There are a number of men who have signified their intention to be with us and give table demonstrations, which will be of greatest value to all. This portion of the program has not been completed.

The secretary will be pleased to furnish any information necessary.

R. B. Wilson, *Sec'y*,
American National Bank Building,
St. Paul, Minn.

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, FEBRUARY, 1907. No. 2

SOME CONSIDERATIONS ON THE CAUSES OF ABNORMALITIES OF THIRD MOLARS.*

BY O. SOLBRIG, D. D. S., PARIS, FRANCE.

In presenting a paper upon this subject I am well aware of the widespread opinion that the third molar at best is but a useless organ for civilized races and we have to admit the fact that of all teeth it is the one most often neglected, not only by nature, but by the patient and even by the dentist. We often find it defective or missing and, if normal, it is often destroyed by extensive decay through want of necessary brushing and care on the part of the patient. The dentist spares neither time nor energy to save any other tooth with long, patient treatment and artistic fillings, but he will often neglect the third molar, and it seems almost an abuse of your valuable time to ask you to listen to a paper upon such a subject.

Yet I do not believe there is any other tooth which needs our attention and consideration more than the third molar. If we look for decay we find it there more often and to a greater extent than anywhere else. Most frequently it is the seat of great pain, and even its normal eruption is nearly always accompanied with great discomfort to the patient.

Abnormalities of structure, form, size and position are here seen at their maximum as regards frequency and gravity. But the morbid conditions of the tooth itself can hardly be compared in importance with the serious complications of which it may be the cause in the surrounding tissues. The destruction of the second molar through pressure on its posterior root, thus causing decay at a point difficult if not impossible to treat, is of small importance when we compare it with the extensive lesions caused by the third molar, endangering general health and even life.

---

*Read before the American Dental Society of Europe, August, 1906.

We all know of extreme neuralgic pain of long standing being caused by the third molar through compression of nerve filaments, or pressure resorption of the second molar.

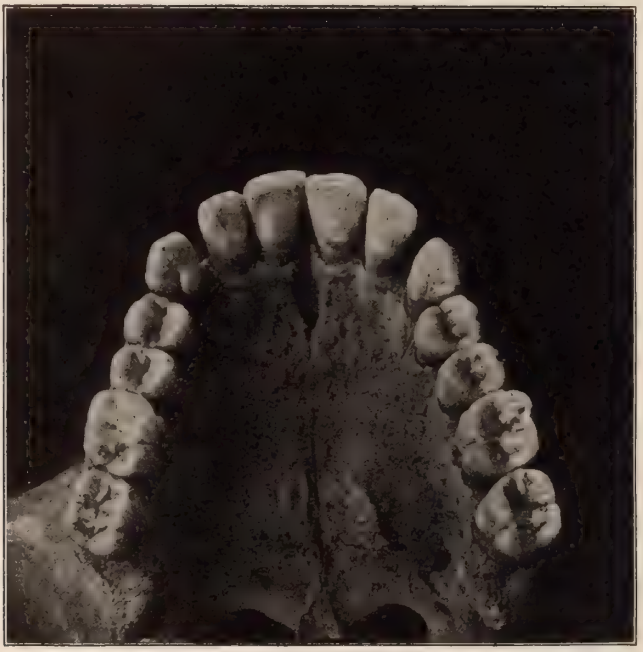


Fig. 1.—Missing third molars in the negro jaw and plenty of space.

There are many cases on record where a diseased third molar has been the cause of inflammatory conditions of the inner ear, resulting in serious disturbances and often causing deafness on that side.

We are all well aware of the gravity of an abscess of this tooth, for it may cause serious troubles like osteomyelitis, oedema of the arytenoepiglottic ligament, phlegmon of the floor of the mouth, periostitis of the maxilla, tonsilitis, affections of the throat, stomatitis, ulceration of the tongue, perforation of the cheeks, fistula, necrosis, myostitis, ringing of the ear, tic douloureux of the face, adenitis and other complications.

Doctor Porre cites eleven cases of chronic pyaemia caused by decayed third molars.

Doctor Para in *Medical News* speaks of a young woman who suffered from a phlegmon extending from ear to chin, the trismus being very pronounced.

Doctor Robert relates a case of an abscess of the lower third molar with purulent infiltration of the side of the neck, followed by necrosis, death being the result.

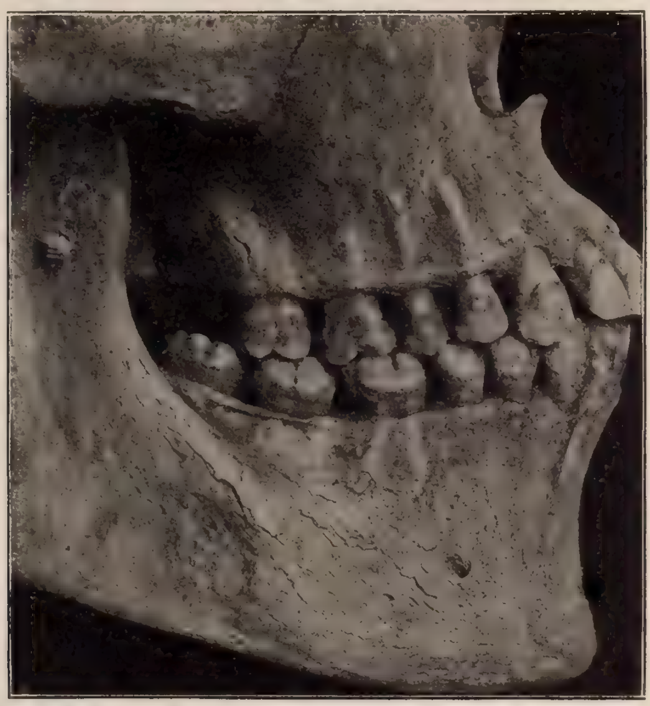


Fig. 2.—The same skull to show the lower third molars present and well developed.

In one case the abscess of the lower third molar was the cause of necrosis, gangrene and blood poisoning, death occurring after twelve days.

In another case a young man suffering with a diseased lower third molar lost his life after fourteen days. The pus had collected about the hyoid bone and glottitis soon followed.

Doctor Despres speaks of a case where the impacted third molar was the cause of an extensive phlegmon and, although tracheotomy was performed, the patient died of asphyxia and general sepsis.

Several cases of death are on record, where the pus made its way to the brain. Let me mention only three of these caused by impeded eruption of the third molar. One was characterized by repeated swellings and trismus, fistula, myostitis and meningitis.

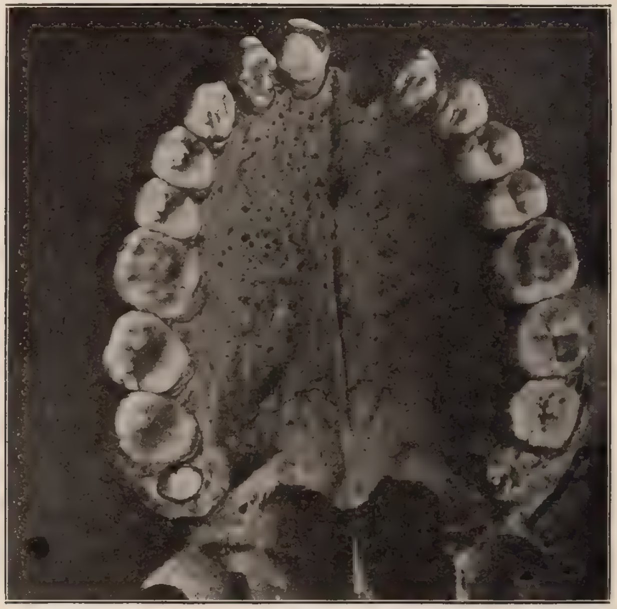


Fig. 3.—Supernumerary third molars.

The clinical observations of another were osteoperiostitis and abscess in the fossa pterygoidæ.

The third caused a perimaxillary abscess and abscess of the brain. Death supervened in all these cases.

But these various and serious complications do not form the subject of this paper. I have therefore mentioned them as briefly as possible only to show how important it is for us to give the third molar special attention and study, and I think a few moments may be well spent in considering one of the most frequent causes of these disturbances, namely, abnormalities.

The causes, advanced by nearly all writers, for abnormalities of this tooth can be reduced to one word—want of space! The shortening of the facial skeleton in the civilized races, excessive size of this tooth, or of the second molar, abnormal disposition of the coronoid process, will, in fact, determine a diminution of space.

It is not my purpose to go into a discussion of the evolution of man from the anthropoid ape and the disappearance of organs through disuse. Let us simply consider the facts as they present themselves, and see what they will teach us without drawing any conclusions based on our imagination.

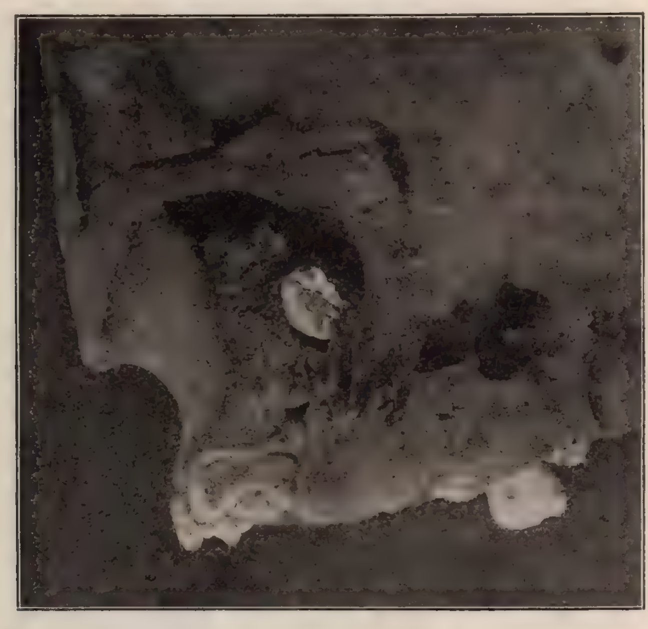


Fig. 4.—The position of the third molar in young specimens.

The question naturally arises: Why does the third molar present so many irregularities rather than any other tooth? Let us discuss the first abnormality, that is, the non-existence of the third molar.

You may say that is a question of race, and uphold the opinion of the anthropologist, Professor Wortman, who, after examining forty Negro skulls, says that the third molars in Negro skulls are always present and well developed. I think most of us have had at some time the same impression, namely, that the third molar is missing only in civilized nations, but after examining nearly 1,400 skulls of different races, I was amazed to find that in 510 jaws of Negro skulls 139 third molars were missing, showing an average of 27 per cent, or in other words, one third molar missing in nearly every second Negro skull. It is, of course, impossible, to ascertain the exact number of third molars missing through fault of development, but I have photographed a few typical cases (and I shall take pleasure in showing them to you at the end of my paper) cases with plenty of space and all the other teeth well developed, but one or two third molars missing.

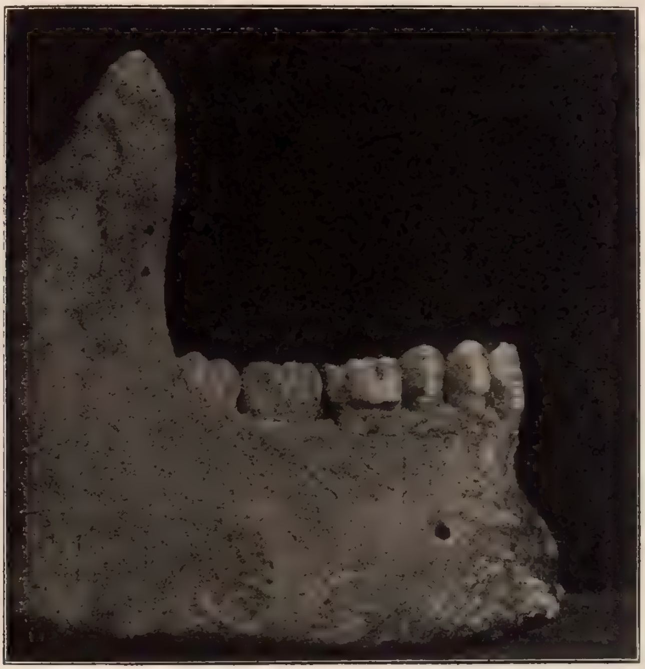


Fig. 5.—Jaw from Caucasian race showing the relation between the coronoid process and the third molar. In spite of little space the tooth is well developed and in its normal position.

We cannot therefore accept the hypothesis of race influence or civilization, as we find examples of non-existence in all races, irrespective of their degrees of civilization.

Many writers are of the opinion that the shortening of the facial angle and the consequent diminution of room in the Caucasian races will explain the suppression of this tooth, but how can we accept this theory, when we find conditions like the above, i. e., Negro jaws with plenty of room and yet the third molar missing; and, on the other hand, we find many short and crowded jaws with this tooth present in spite of all difficulties.

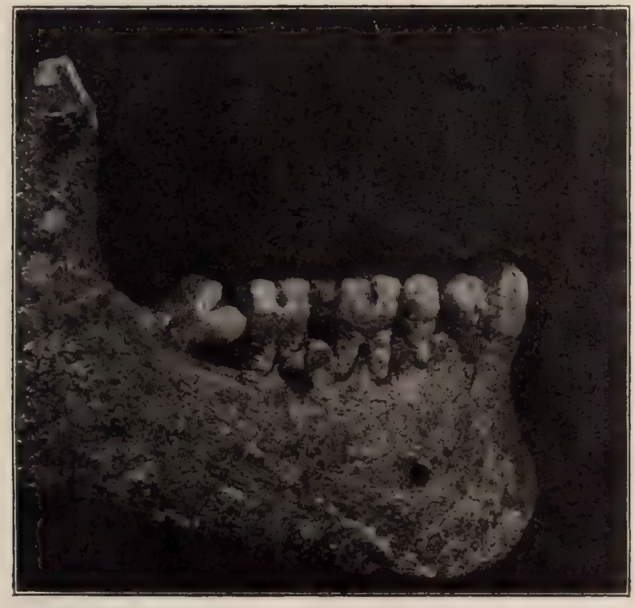


Fig. 6.—A negro jaw with plenty of space and the third molar in abnormal position.

Another argument set forth by some writers for its want of development is disuse. But how can disuse prevent it from coming? We know that disuse can cause atrophy of any organ, but this can only take place after it is formed, and it is absolutely inapplicable to teeth, organs which are unchangeable after their complete formation.

Even heredity does not seem to explain it, for it has never been possible, as far as my knowledge goes, to establish satisfactorily the absence of the third molar through several generations, owing to hereditary causes. We were never able to trace the missing of this tooth through several generations.

Let us see if other examples in the human body will teach us something in connection with our subject? We are all cognizant of the mutilation of Chinese feet for generations and generations. Deformity of these parts of the body have been there carried systematically to their utmost extent, and still every Chinese girl is born with normal feet, and has to start all over again if she wishes to satisfy her sense of coquetry and vanity. And when we see that a hunchback, a man born blind, a mute, will have normal children, and men without arms or legs—cases of undoubted disuse and deformity—will have children with normal extremities, why should we suppose that a father without a third molar will transmit this loss to his offspring?

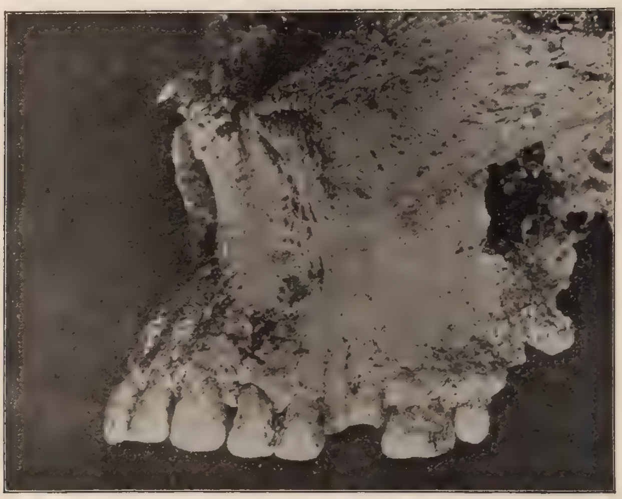


Fig. 7.—Third molar of small size in a Caucasian skull over 2,000 years old.

How can we defend the hypothesis of the ultimate disappearance of this tooth on such frail ground and such feeble arguments against all evidence? And how shall we explain the supernumerary third molar, which is quite frequent, and of which each one of you has doubtless observed cases in his own practice. Would it be right to say that they prove an ultimate increase in the number of our teeth? It would be illogical of us to draw conclusions only by one deviation from the normal, without taking into account the other. We also know that the lateral incisor is missing or rudimentary in a great percentage of cases, but I am convinced that human dentition will never be without it, any more than we shall be without hair on our heads, in spite of the great number of bald heads.

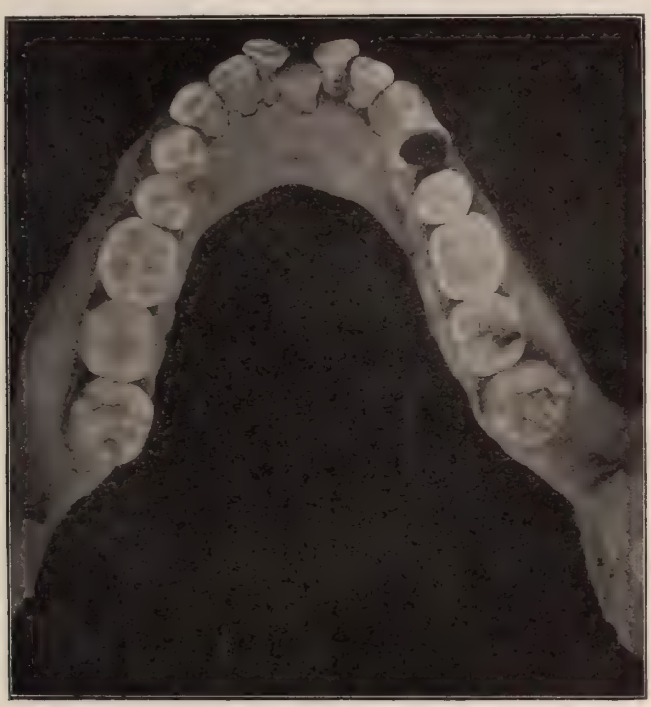


Fig. 8.—Rotation of the third molar in its socket.

All these different theories mentioned being unable to give us a satisfactory explanation, we are obliged to seek for other reasons. If we study the embryology of the teeth we find that the dental organ of the third molar is the last which makes its appearance.

According to Burchard the follicle of the first molar is differentiated about the fourth month of gestation, this in its turn gives off the dental organ for the second molar between the seventh and eighth month of gestation. The enamel organ of the third molar, arising in its turn from the cord of the second molar, does not appear until about the third year after birth. There it lies in the tissues of the jaw till about the twelfth year before calcification begins, and it is not before 21 years of age that it makes its appearance, its roots not being even then fully developed. During this long period of about eighteen years this delicate dental germ is exposed to different influences, which I think will easily explain most of the ultimate abnormalities.

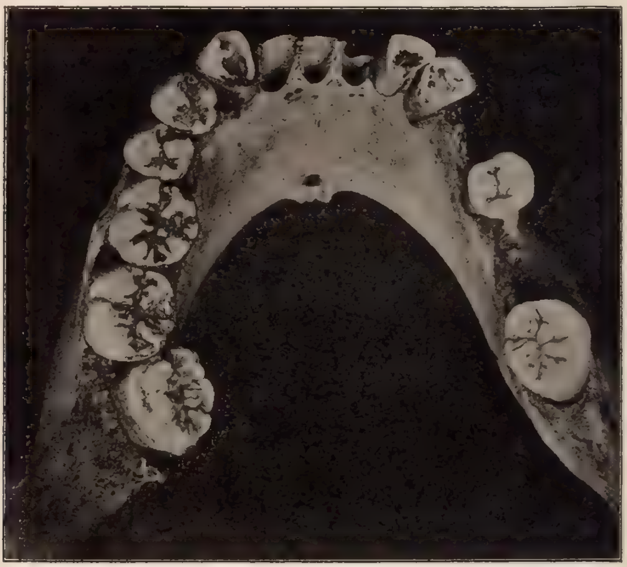


Fig. 9.—Deviation of the third molar to the lingual.

We will notice that the dental organ of the third molar is the only one that is given off after birth, and not before the third year. During this period through nutritive, inflammatory or traumatic disturbances, or through other morbid conditions, the vital force may be checked in forming the little bud for the third molar, and this, to my mind, is the only explanation for its non-existence. If it were a physiological consequence of the pretended evolution of man we should expect to find the same defect with all four third molars of the one subject; but this is not the case. We very frequently find them missing in one jaw and well developed in the other, or only one missing and the three others in their places.

This same argument—based on the study of embryology—will hold good regarding abnormalities in size, form and structure.

In fact, surrounding influences may interfere with the proper development of the dental organ, and will thus account for the third molar being of very small size.

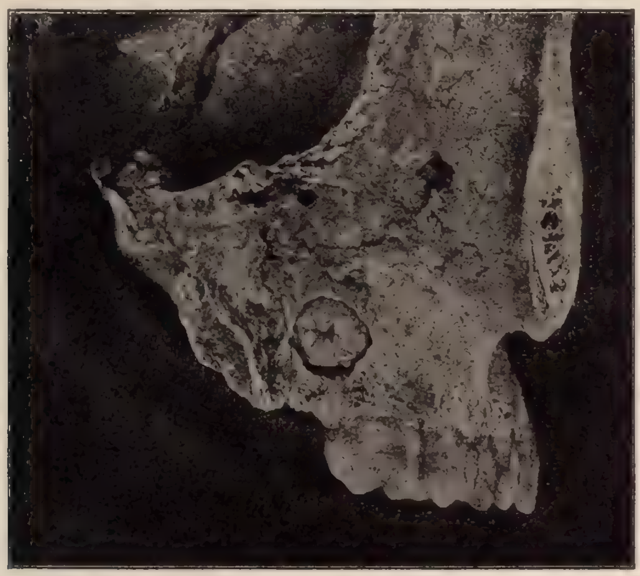


Fig. 10.—Roman skull. Deviation of the third molar toward the cheek.

Excessive size and abnormal form can easily be explained in the same manner, viz., that we find the origin of these deviations in the dental germ. But why should we regard these phenomena as indicating the final disappearance of third molars when we find similar conditions in the other teeth? And, if this tooth presents these variations in a larger precentage, its particular embryology will give us, I think, a satisfactory explanation.

Now we come to the most frequent and most interesting abnormality of the third molar—its malposition. We will agree with Burchard when he says: "It is evident that comparatively slight forces may deflect the direction of eruption of teeth," and we may add that this is especially true in regard to third molars, for, being only partially formed and loosely enclosed, they are exposed to the influences of these forces for a longer period than all the other teeth. It is surprising that these irregularities do not occur more often, for the enamel organ of the third molar is lying back in a position of the jaw, which undergoes most extensive changes, almost doubling in size from three to twenty-one years, but this delicate dental germ will nevertheless as a rule develop into a well-formed tooth and occupy its normal position. But it seems to me quite impossible to agree with Burchard as to the theory of these abnormalities. Speaking of the upper third molar he says: "It erupts outwards toward the cheek as the path of least resistance. The relations of the pterygoid process and the palatal bone with the tuberosity make a path of greatly increased resistance, forward eruption is prevented by the second molar, backward eruption by the pterygoid process."

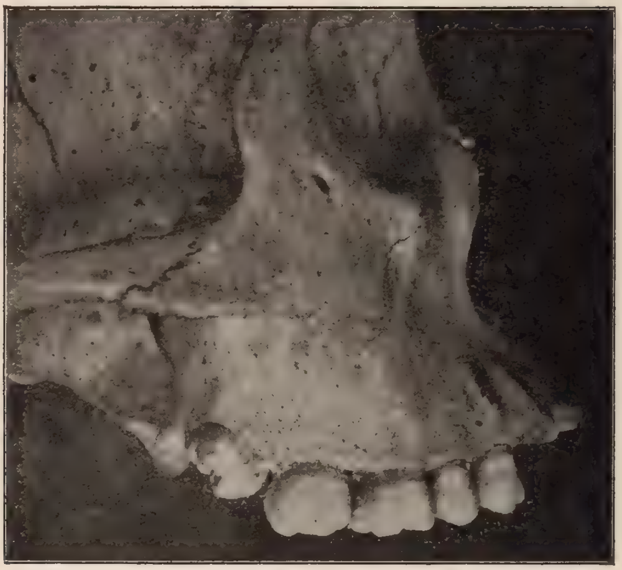


Fig. 11.—Negro skull. Deviation toward the cheek.

We can certainly not admit a theory that seems to uphold that the third molar will erupt in the direction of least resistance. It would lead us to suppose that the tooth had tried all the other directions before erupting and choosing the outward movement toward the cheek. Or must we think that after finding the pterygoid process, the palatal bone and the second molar too hard and unyielding, it finally turned away from them, contenting itself with the alveolar plate toward the outside? We know that the pus of an abscess will follow these laws and make its way out in the direction of least resistance, but this is not the case when it comes to the process of eruption of third molars. Moreover, typical examples of the different kinds of maleruption will prove this to be true. We will see the third molar erupt in all directions, regardless of difficulties, obstructions and resistance. If it has any tendency at all, it tries to come into its normal place through the same inherent vital force which makes teeth in general assume their normal position. But let me repeat again that during the period of development some force of influence may deflect the dental germ which thus develops and erupts in its altered position, and this abnormality will only be exaggerated as the roots grow long. Resorption of the cortical layer and even of the second molar will take place, but never will they force the third molar to take its normal proportion.

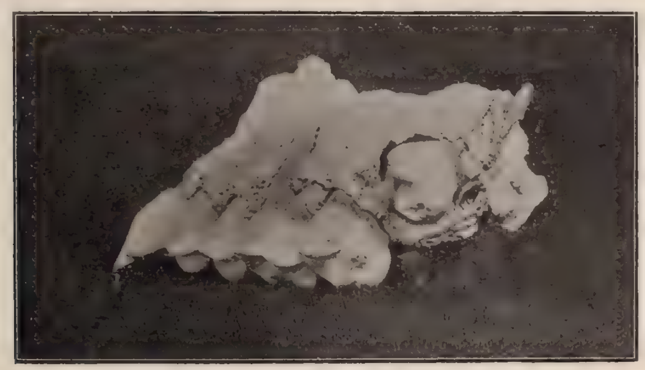


Fig. 12.—Deviation toward the front.

STUDIES OF THE BEGINNINGS OF CARIES IN ENAMEL WITH REFERENCE TO FILLING TEETH.*

BY G. V. BLACK, M. D., D. D. S., CHICAGO, ILL.

The study of dental caries as it relates to dentine may now be regarded as complete. After twenty years of careful research by the best men of the world, the studies by Dr. W. D. Miller, of Berlin, have met with general approval as to correctness, both in principle and detail. It may now fairly be said that careful thinking men are agreed upon all of the principal facts of the relation of micro-organisms to these processes, and the nature and order of the processes themselves. Discussion is practically closed.

Studies of caries of enamel have not yet progressed to completeness. Certain facts only have been completely made out and agreed upon. It is now well known that caries of enamel is in a general way due to lactic acid produced by the fermentative processes of micro-organisms growing in the mouth, but it is not universally conceded that this is the only way in which caries of enamel may begin. In one of the more recent utterances of Dr. Miller, in an allusion to caries of buccal surfaces, he seems to throw doubt upon this, and attributes the beginning of decay of the enamel in certain cases to a perverted secretion from the gingivae. But that the primary agent of attack is an acid I think all are agreed. Also all are agreed seemingly that it is the cementing substance between the enamel rods that is attacked first, and that as this is dissolved out the rods themselves are loosened, and finally fall away, or are themselves dissolved. I will show by photographs which I will throw on the screen that the extent of the solution of the cement substance from between the enamel rods, as compared with the solution of the rods in caries of the enamel, is far greater in all protected places than the general profession had heretofore supposed. Indeed, upon proximal surfaces it often appears that the enamel rods are not dissolved at all, or at most but very slightly, and that they do not as a rule fall away until their connection with the dentine has been broken up by solution of the calcium salts of some considerable portion of the dentine. Until this time no micro-organisms have entered the dentine. This important fact I have been able to determine through work with new apparatus for slicing teeth and grinding sections which enables me to obtain good sections of the frailest material.

---

*Read before the American Dental Society of Europe, August, 1906.

Other factors that enter into and control the action of acids in the beginning of caries of the enamel are yet in what may be called the stage of discussion. That which one man may claim as a fact many others will regard as an opinion, or may without impropriety claim that the evidence is insufficient, etc. So long as this is the case no one, perhaps, has the right to say dogmatically that such and such a thing is true, especially if he cannot formulate plans and prove it by laboratory experiment, that others may follow and substantiate or disprove his claims.

Among the important questions now in this condition, in relation to the first beginnings of caries of the enamel, are these:

1. By what power or influences is the localization of the beginnings of caries of the enamel controlled?

We find as a fact that in something more than ninety-five per cent of the cases the beginning of caries occurs in one of three positions upon the teeth, i. e., (1) pits and fissures, (2) proximal surfaces, and (3) buccal (or labial) surfaces.

In the first it is sufficiently evident that the existence of the pit gives the opportunity for the beginning of decay. The last two, if we include the lingual surface, which occasionally exhibits a like tendency in cases of extreme susceptibility, forms a band encircling the crown of the tooth near the free margin of the gum following its curvature as it arches over through the interproximal space. As the rule the anatomical angles of the teeth, reaching from occlusal to gingival, are immune, thus confining the beginnings of decay to the buccal and proximal surfaces in all cases except those of extraordinary susceptibility.

We find further that decay does not occur by reason of acid developed in the general saliva, for most immune persons have saliva that is acid to the litmus test. If it did occur from this cause the teeth would decay all over, which they do not do. This was pointed out by Dicerebode in 1838, and has been before the profession for more than sixty years, though forgotten or overlooked by many writers. The acid causing decay must be formed immediately at the point of attack under conditions that prevent its solution in the general oral secretions.

2. By what power, or by what circumstances is immunity from or susceptibility to dental caries controlled?

This is properly divisible into four divisions: (1) Why is it that the child who suffers badly from caries may become immune as he or she grows older, provided the decay occurring in youth is so controlled as to prevent destruction of the teeth? (2) Why is it that the person who has been immune to the beginnings of decay of the teeth develops susceptibility? This susceptibility seems evidently due to some systemic change, since it is so often of short duration; immunity again recurring after a longer or shorter period of susceptibility. (3) Why is it that susceptibility is so often renewed or greatly increased in pregnant women? (4) Again, why is it that susceptibility to dental caries so frequently again recurs in old age in the form known as senile decay?

It seems to me quite probable that in its final solution it will be found that the same or very similar causes are active in these several conditions, resolving the questions into the one first stated.

In former years these divisions of the question were differently explained. The *localization of decay* was thought to be due to imperfections or weakness of the tooth structure itself at the points attacked. Of course, this could not be certainly shown after the attack because of the destruction of the tissue. The greater range of observation, however, that has now been had shows perfect tissue on proximal surfaces to be so general that the counter observation that upon occlusal surfaces decay is limited to such imperfections as pits and fissures, is no longer sufficient reason for assuming imperfections on proximal surfaces.

The second division, i. e., regarding *susceptibility and immunity* had long been explained on the supposition that some teeth were poorly calcified and for that reason decayed readily, while other teeth were well calcified and decayed slowly or did not decay at all. Becoming immune after the susceptibility of childhood and youth was explained on the supposition that the teeth were poorly calcified and soft in childhood and became harder and more dense later. Also it was claimed that the teeth of pregnant women became soft because of the abstraction of calcium salts to build up the bones of the fetus and therefore often decayed badly during such periods, and during the depletion resulting from lactation. Still further, periods of interference with the proper nutrition of the teeth were charged as the underlying causes of the reappearance of caries occasionally noted after a considerable period of immunity. You will note that in all of this, decay of the teeth was charged to imperfection or weakness of the teeth themselves.

All of this was broken down in 1895 by rigid investigation of the physical characters of the teeth in which the condition as to calcification was the principal factor studied. In this it was clearly shown that the differences in the calcification of the teeth supposed did not exist. That so far as affecting the solution of their calcium salts, all teeth were found, practically, equally hard. (*Cosmos,* May, 1895.)

Since the publication of these papers, which at that time raised a storm of disapproval, I have waited and watched the results of the work of others for the development of any facts that would justify a different explanation. And now it seems that all of the results of research that have since been developed, only tend to confirm the results then announced. In this I include the utterances of Dr. C. S. Tomes before the British Dental Association, 1896, and Dr. Miller's most excellent and exhaustive studies of the action of acids upon the calcium salts of teeth from persons supposed to be in the different conditions of susceptibility and immunity, given at the fourth International Dental Congress in St. Louis in 1904. It may now be regarded as firmly established that dental caries does not occur because of any faults in the calcification of the teeth further than that pits, grooves and accidental physical imperfections give greater opportunity for the cause of caries to act. Also that there is no such thing as soft teeth and hard teeth in the sense that these phrases have heretofore been used. Neither susceptibility to decay nor immunity from decay are in any wise dependent upon variations in chemical composition of the tissues of the teeth, but must be dependent upon the oral secretions and what they may contain that enables the fermentative process to develop substances that may act upon them, and localize that action.

Returning now to the two propositions named, the factors that control the localization of the beginnings of caries, and those that control immunity and susceptibility, we find them really the questions the solution of which is most likely to enable us to control dental caries. For, if caries is the result of a dyscrasia—a systemic condition—we have a hope that by gaining a knowledge of it we may find a way of controlling it by medication, mode of life, or other means, and thus master the difficulty at its inception. Really our more extended knowledge in recent years of caries of dentine has not given us much greater control of the affection. Extension of decay in the dentine is at most a secondary incident in the destructive process. It is not the beginning. It is the beginnings of caries of enamel that interests us most. If we can learn to prevent caries of enamel, caries of dentine will not occur. What improvement we have made in filling teeth in recent years, other than that which is purely mechanical, is due mostly to the studies of the forms, localities and surroundings of the beginnings and superficial spreading of caries of enamel; the laying of plans to place enamel margins on the less susceptible lines to avoid the recurrence of caries, etc.

These two questions relative to caries of enamel, with their variations of detail, are the main questions now before us for experimental research, discussion and final settlement. A glance at the purport of these questions will show that they, after all, are the main practical questions, the solution of which will in the future become our guide in the treatment of dental caries. The plain indications are that this treatment will be directed to the general system for the correction of the secretions and the control of the environment in which the teeth are placed. This should in a large degree take the place of the present plans of prophylactic treatment and treatment by mechanical repair. Thus far we have treated caries almost entirely by the mechanical repair of the injuries it has inflicted. True, we have learned (some of us) in these later days to do this in such a way as to prevent much of that recurrence of decay of former-day filling operations, but still it remains mechanical treatment pure and simple on the general plan of repair work. While in the broader sense it may be adapted to the alleviation of pathological conditions, still it is not curative, in that the condition of susceptibility is not removed.

On the first of these propositions I have personally had definite ideas, developed principally through my work in bacteriology and histo-pathological studies of the beginnings of caries of enamel, together with observation in the mouth, which reduces the two propositions almost to one, they are so closely related. It is this:

While the beginnings of caries of the teeth is caused directly by acids produced by the fermentative action of certain varieties of micro-organisms which grow in the oral secretions, the particular characters of this growth required to bring about the local concentration and application of the acid produced so that it may act to cause the beginning and spreading of caries, is under the control of certain systemic conditions not yet accurately defined. These conditions so modify the general fluids of the mouth that these certain micro-organisms growing in it produce a gelatinoid material as a by-product in one case and do not produce this in another case. In the second case there are no beginnings of caries of the enamel, hence no decay of the teeth. In the first case this gelatinoid material grows and clings to the teeth in sheltered places, the bacteria growing in it, or under it, or both. This gelatinoid material acts as a dialyzing membrane passing *in* the salts from the saliva (sugars, etc.) which keep up fermentation, and pass *out* salts to the saliva (lactate of calcium, etc.) that result from the acid solution, or decomposition ,of the tooth structure, thus eliminating the waste product of the organisms, promoting and keeping up the process of fermentation in apposition with the tooth surface in such a way that the acids formed are not diffused in the saliva, or washed away as acids.

Generally it is the growth of acid forming bacteria in the saliva that causes its acidity, but this acidity of the general fluids of the mouth is not, as previously stated, a cause of dental caries. For years I made it my business to search out immunes—those who never had decay of their teeth—and enlist their interest and aid in the study by giving me the opportunity to study the fluids of their mouths. In these I have as constantly found the saliva acid to the litmus test as in the mouths of those especially susceptible to dental caries. Further, I have cultivated micro-organisms from these mouths. In them I have found the same species growing and apparently in similar quantities. I have taken their own saliva as culture media and compared the growth of micro-organisms with similar growths in saliva from those who were very susceptible to caries. So far as mere quantity of growth or final acidity of the product was concerned, there seemed to be no very important differences. I bring this forward to impress you with this one point which I believe to be a rational fact not appreciated by many men. Growth of micro-organisms in the saliva with fermentation and the production of lactic acid is a necessary concomitant to the beginning of caries, but it is not the only necessary factor in the localization and production of the beginnings of dental caries. It requires growth and production of acids in contact with tooth surfaces under conditions that will prevent diffusion of the acid in the general saliva and apply it directly to the solution of tooth material, or calcium salts. This is accomplished in highest degree by the production of the zoöglia forms of growth or the massing of bacteria in gelatinoid products in contact with the teeth in sheltered positions. This is the condition as we find it in nature. I have several times copied it in an artificial way by placing bands upon the teeth of immunes, leaving a little portion without cement. This band will allow of a growth of micro-organisms between it and the tooth at the uncemented point, and will act as a shield to prevent the too rapid diffusion of the acid formed and caries will result even in persons who otherwise never had a carious cavity. It is therefore not necessary that a gelatinoid material be formed to enable decay to start in a deep pit, fissure or other point that may be sufficiently secluded by impaction of fermentable food material, to shield the acids formed from dissipation in the oral fluids. But in the main on the smooth surfaces of the teeth it seems to be the growth of micro-organisms in the zoöglia forms that causes the localization of caries and the gradual spread on the surface of the enamel.

I have written of this more at length and more specifically for the reason that when certain elements or their salts have been said to have been found uniformly in the saliva of immunes, some one has hurried to his culture oven and quickly proclaimed that micro-organisms grew well in the presence of greater quantities of this particular salt than was ever present in the saliva. Therefore this material could not be responsible for the immunity.

This to my mind is in no sense a reason why these substances may not be responsible for the immunity. The acid producing micro-organisms responsible for dental caries will grow well in a culture medium devoid of sugar, starch, etc., but under these conditions they will not produce an acid product. Here a principal product is completely changed for another not yet accurately known. In the other case a by-product only is changed. It is this by-product that creates the conditions that render the action of the principal product operative; enabling the organisms and their acids to act in the one case and causing their failure to do so in another.

But as yet I cannot prove these things at will. I have grown this gelatinoid material in my culture tubes, but have not been able to formulate plans by which I can do so at will with regularity, and cannot therefore direct others with certainty in the repetition of the experiment. I have also taken these gelatinoid growths off of teeth in the mouth, demonstrating their presence over beginning decays, but I am not by any means able to do this in every case of beginning caries, even upon buccal and labial surfaces when the best opportunities seem to be afforded. I fully believe, however, that the plaque has been there. Until I am able to do one or the other of these with reasonable certainty and can direct others how to repeat the observations, I probably should recognize the right of others to say "not proven."

I want to distinctly state here, as I have frequently stated before, that it is not loose aggregations of micro-organisms clinging to the teeth, greasy masses, inspissated mucus, or mere slime that I speak of here as gelatined substance or zoöglia forms of microbic growths. It is not difficult to show any amount of such material in microscopic slides. All such masses are readily penetrated by the saliva and any acids developed in them are washed away almost or quite as readily as if they did not exist. They cannot be favorable to beginning caries. Not infrequently the decomposition in these is putrefactive and no acid is formed; in this case they act directly to stop the advance of any incipient caries that may have begun.

In the meantime Dr. Michaels has confidently asserted that in those manifestly susceptible to caries there is a superabundance of ammonium salts, and an absence of sulpho-cyanates in the saliva. In those immune to dental caries, he finds a diminution of or an absence of the ammonium salts, and the presence of sulpho-cyanates. So constantly do these conditions occur in these relations as to render them necessary conditions to the beginnings of dental caries on the one hand and the condition of immuity on the other.

In the *Dental Cosmos* for February, 1906, page 190, Dr. F. W. Low of Buffalo, N. Y., by working along somewhat similar lines, has practically confirmed Dr. Michaels' findings. As I understand Dr. Low's report, he finds in typical susceptibility to dental caries an excess of ammonium salts and an absence of sulpho-cyanates. In typical immunity he finds an excess of sulpho-cyanates and a reduced amount of ammonium salts. Several other observers are reporting similar results.

In Dr. Low's report there seems to me to be some incongruities that further studies may dispel. In any case the work must be continued perhaps for years before unimpeachable and working conclusions can be had. All of the methods of chemical experiment must be sifted for error and put into practice by other experts until the last opportunity for error has been removed, before the word "proven" can confidently be pronounced.

Whatever may finally be determined as the full truth in this matter it is sufficiently evident that the present methods of treatment of dental caries will not be seriously disturbed or changed for years, perhaps many years to come. It is therefore of the first necessity to the communities we serve that we continue to improve these by all the means in our power. To these ends it is of the greatest necessity that we study the beginnings of and the spreading of caries of the enamel in all of its phases closer and closer as the years go by. Especially we need to study more closely the areas of susceptibility and areas of immunity of the teeth, and the forms and the surroundings of the beginnings and spread of caries of enamel among our patients, and compare these with that which is adduced from time to time by scientific research, in order that we may render our work at the chair more effective. In the pictures illustrating beginning decays I can now present we are getting closer to the facts than formerly. These not only show what has formerly been known that in its first beginning it is the solution of the cementing substance between the enamel rods, but that this may go on until the rods are cut off from their attachment to the dentine before a single rod is broken or falls away. Also, that a very considerable solution of calcium salts usually occurs in the dentine before there is any entrance of micro-organisms into the structures of the tooth. All of this is accomplished by acids formed upon the surface of the tooth by micro-organisms clinging to it and producing fermentation more or less continuously.

In this my observation shows the rule to be that there is a certain sheltered point which forms the nidus of decay. These are often very small or possibly divided into two or more points in the beginning in proximal or buccal surfaces, forming a line near the free border of the gum. These spread and run together. In studying these, especially in cross-sections in which we can cut lengthwise the area of beginning decay, we find the points of beginning marked by the greater depth of the penetration of the acid. When the growth begins at one of these points the tendency is to spread in every direction that the conditions as to disturbance and removal of the micro-organisms clinging to the surface of the tooth will allow. The result is that decays of the enamel starting from a single nidus are usually in the form of a cone with a broad base at the surface of the enamel. In all cases the spreading is clearly on the surface of the enamel. There is no lateral spreading of decay within the enamel tissue. A solution of the cement substance between the enamel rods having begun on the surface, follows the length of the rod to the dentine without perceptible lateral movement. The rate of superficial spreading compared with the penetration is clearly marked.

When the enamel has fallen to pieces and the decay becomes seated within the dentine and an open cavity is formed, the conditions are often wholly changed. The central nidus favorable to the attachment of micro-organisms is lost and the conditions often prevent the attachment of a new growth. Therefore, further superficial spreading does not occur. It appears from many examinations that if the spreading of decay has been small in area, when the central area of enamel falls away no superficial decay of enamel will be seen about it. But if a filling is made restoring the original form of the tooth, the nidus for reattachment is again formed and the growth recurs on the filling as it did upon the tooth. Then there is the tendency to spread beyond the margins of the filling, causing a recurrence of decay.

In recent observations in the mouth I have found the gelatinoid material clinging with remarkable tenacity to gold, amalgam and porcelain fillings, and extending its borders out beyond their margins onto the enamel, carrying with it the beginning of recurring decay as was manifested by the whitening of the enamel surface in some, and the actual breaking down of the enamel in others. Indeed, some recent observations in this direction have surprised me. For it appears that an excellent filling may serve, in some instances at least, as a bridge for a wider extension of decay of the enamel than would occur if the filling had not been made. I have observed this especially in some labial decays where the opportunity for effective inspection of the conditions were especially favorable. That this same disposition to extension occurs about proximal fillings is none the less manifest. Therefore those who claim no more extension is necessary because there is no showing of caries of enamel about their cavity margin, will often be caught with extensions of decay where they least expect it.

I have frequently heard the remark that micro-organisms did not accumulate upon porcelain inlays, but examination of these shows the same conditions as are found in other fillings and the teeth themselves. Indeed upon porcelain inlays and other fillings they seem to cling very much closer than to the enamel, for the process of solution of the calcium salts which is going on under the latter and is lacking in the former has the tendency to loosen them, rendering them more easily removed.

I think that the idea that this attachment does not occur on porcelain inlays is derived from the fact that the cavities for these have been cut much wider than the same operators have done for metallic fillings, in most instances laying the margins on immune lines, making it impossible for the margin to be overlapped by such spreading.

In the preparation of cavities for metallic or inlaid fillings in occlusal surfaces, the only extension called for, after removing all undermined enamel, is to follow out sharp grooves to such a point as will afford the opportunity to make a good, smooth finish of the filling. In these there is no tendency to the extension of caries on the surface and further precautions are unnecessary. But in the preparation of cavities in the proximal or buccal surfaces (or any of the smooth surfaces of the teeth) the case is entirely different. It is in these that the beginnings of decay of the enamel spread superficially and in these careful systematic extension for prevention is called for. In the preparation of these we must depend upon our knowledge of immune and susceptible areas of the surfaces of the particular teeth, and our judgment of the degree of susceptibility of the individual, and always endeavor to so lay cavity margins that they will include all of that area of the surface operated upon to which caries is liable to spread in that individual. This information and judgment must be derived (1) from the general studies one may make of immune and susceptible areas of the surfaces of the teeth together with the most abundant observation possible of the superficial spreading of caries; (2) from careful examinations and studies of the tendencies in the individual; (3) from studies of the hereditary tendencies in the individual's family, and the combination of these factors with the age and habits of the patient. With these well considered, such extension of cavity margins toward the least susceptible areas should be made as will give the least probability of the spreading overlapping the margin of the filling and causing a recurrence of decay in that surface of the tooth. Often in proximal surfaces of the teeth this may be better done by changing the relation of the surfaces of the adjoining teeth to each other by wide separations, and building prominent contact points than by very wide cutting.

The usual forms of cavities adopted will be illustrated on the screen.

In all of this we must keep in mind closely the limitation of extension for prevention; that is, that in normal relations of the teeth to each other the angles of the teeth are to be approached, but never passed in the extension of the margins of cavities. Normally the angles of the teeth reaching from occlusal to gingival are the lines of greatest cleanliness upon the axial surfaces of the teeth and therefore these are the lines of safety upon which decay occurs or spreads past from any direction least often. Also the openings of the embrasures and the disposition of food to run through them, and clean their area from occlusal to gingival in its excursions, should receive the most careful study. Often plans may be laid to facilitate by slight changes of form this kind of cleaning of margins of fillings. These points call for our greatest care in very susceptible persons, remembering always that the approach of cavity margins to the least susceptible areas is what is called for. We should never pass such a line unless driven to it by extension of caries either upon the surface of the enamel or in the dentine undermining the enamel to such an extent as to cause it to be unsafe.

At the conclusion of his paper Dr. Black exhibited a series of slides illustrating the various points under discussion. He said it had been his aim to call attention as strongly as possible to the tendency of the decay to spread, not in the enamel, but on the surface of the enamel; it was always on the surface of enamel except possibly in some pit and fissure cavities. If a patient would use clear water and a tooth brush three or four times a day insipient decay on the buccal surfaces would disappear, and in ninety-nine cases out of a hundred no more decay would occur on those surfaces. It was difficult to get the patient to do his full duty, but where he did it it was certain to control the decay without any filling.

POINTS OF DIFFERENCE.*

BY D. D. SMITH, D. D. S., M. D., PHILADELPHIA, PA.

Having in view the increasing advantages and opportunities for study and clinical observation afforded the dental profession during the past twenty-five or thirty years, should we for our enlightenment, for discussion, or for our professional awakening and stimulating to better things, propound the question, has the dental profession reasonably met the obligations imposed upon it by suffering humanity, or measured up to what might reasonably have been expected of it as a profession per se? To these and to all similar inquiries there could be but one answer and that in the most decided negative.

Dentistry, in recent years, has improved its appliances and in some measure its methods, but the vaunted general advancement of the profession as a whole is a matter of boasting rather than a reality. Where there has been advancement and improvement in special mechanical processes and methods, it has been a result of study and effort on the part of individual members rather than because of any special upbuilding of the body of the profession, or because of any advance in the methods or substance of teaching in dental colleges, or because of any new and helpful scientific matter running through dental literature.

It is for the purpose of awakening thought and discussion that I have chosen "Points of Difference" as my subject for this occasion. By points of difference, I mean some of the present theories of dentistry at variance with facts that I have demonstrated and promulgated, and modes of practice that I have taught and hold to be correct.

It will be conceded by all, I think, that but few practitioners know the true meaning of the practice of oral prophylaxis and fewer still have any just conceptions of the benefits flowing from it. There has been great misconception and misunderstanding regarding it, and no little misrepresentation attended with suppression of facts also; the latter by some who should have been foremost in advancing the truth. In the minds of a considerable number, it has been confounded with that hypothetical absurdity known as "The Trained Dental Nurse."

---

*Read before the Minnesota State Dental Society, June, 1906.

Dr. Hoff, of Ann Arbor University, said recently: "The mass of the profession know absolutely *nothing* of this work and those who have had the opportunity of knowing of it have not comprehended it sufficiently to take it up even in a perfunctory way."

The first paper on this subject was written for the Northeastern Dental Society in 1898, and styled Prophylaxis in Dentistry. This article was published in the *International Dental Journal* in January, 1899, followed by another having the same title, in September, 1900. These two articles were succeeded by two on Oral Prophylaxis, one published in December, 1901, and another in May, 1902. In this connection I might also mention a more recent article on Systemic Infection Due to Natural Teeth Conditions, one on Alveolar Pyorrhea, Its Cause, Sequelæ and Cure, Six Years' Work in Oral Prophylaxis, and, lastly, a paper on Pericemental Abscess.

These papers, all having an intimate bearing on the same subject, all read on different occasions before societies in Hartford, Philadelphia, New York, Cincinnati, Boston, Albany and Pittsburg, show something of the results of eight years of practical investigation, experimentation and progressive educational work along the lines of oral prophylaxis, have all been published, with one notable exception, in some one of the dental journals. The article on Alveolar Pyorrhea, Its Cause, Sequelæ and Cure, was read before the New York State Dental Society in 1903, and should have appeared with the transactions of that Society as published in the *Cosmos* of that year. It was evidently ruled out, not by the society, but by the editor, Dr. Kirk, for reasons which may be considered some time later.

The developments attending the system of practice set forth in these articles have to me been truly wonderful, bordering almost on the marvelous.

Following a consistent oral prophylaxis treatment, will be found a change for the better in all mouth conditions, including complete prevention of decay in deciduous teeth and the arrest of from 70 to 90 per cent of all new decay in adults. There will be more perfect alveolar development in the young. The color of all teeth, their general appearance, and even their internal structure will be found distinctly better, evidently made so by the stimulation of this treatment. Under the treatment abnormally sensitive gum tissue returns to its normal condition of low grade sensibility; the gums become tense and hard with no tendency toward bleeding; perfect festoons and beautifully striated gum tissues appear, all marginal irritation and all tendency to alveolar pyorrhea are eradicated, and last, but not least, complete immunity from mouth infection ensues.

Mouth infection caused by septic teeth will in the near future be recognized not only as the most prolific source of caries but as the instigator of many disorders of the stomach, kidneys and lungs.

If such benefits as these form the foundation of the oral prophylaxis treatment, it certainly presents to the dental profession considerations *demanding* investigation. Conditions such as these, rather than the mechanics of filling teeth, have true kinship with interests belonging to the medical profession; and when this is fully recognized it will bring medicine and dentistry, at least, into the fellowship of consultation.

In this connection the attitude of the dental journals, perhaps we might more correctly say, "trust journals," is much to be deplored. The columns of some of these journals have been opened to this matter of oral prophylaxis with difficulty, and in some cases have not been opened at all. A few editors have refused my articles upon this subject, alleging personality as an excuse; or that they could not accept an article that had been published by another journal.

The leading trust organ, *The Cosmos*, has closed its columns to all my papers as sullenly and inscrutably as a feeding clam, when disturbed, closes its shell.

In May, 1903, the editor of that journal, Dr. Kirk, stood at my chair upon an occasion when I exhibited for his special inspection the mouths of a number of patients, that visibly demonstrated the benefits of this system of treatment. Dr. Kirk at that time volunteered the remark: "Dr. Smith, if our theories of decay are correct, then this is the solution of it." He has, however, in no way further promulgated, or sought to make known to the readers of *The Cosmos* his declaration as then expressed, notwithstanding that soon after he admitted to the columns of that journal an article on "The Trained Dental Nurse," an article in which the profession is charged not only with gross neglect but even with shameful venality—probably it is the most unjustly condemnatory of the dental profession of any paper that has ever appeared in print. In this article Dr. Rhein had the temerity very plainly to intimate that he with others had long known the benefits and advantages of this system of practice, but that it had been withheld from patients through motives of "expediency."

No criticism, no commendation, no editorial mention of this momentous discovery in dental science, can be found in the editorial columns of *The Cosmos.*

Dr. Crouse, editor of that once independent journal, *The Dental Digest,* after a day—July 6, 1903—in my office, where, with others, he saw the benefits of this system of practice exhibited in the mouths of about twenty patients, as he was leaving, placed his hand on my shoulder and said: "Smith, I will give you an editorial on this." Why is it that to this day Dr. Crouse has failed to present one word descriptive of what he then saw, or to give to the profession anything of his impressions respecting this most important subject?

Has the persuading hand of the Dental Trust reached even to the sanctum of the editor of the *Digest?* There was at one time bitter wrangling and apparent enmity between the *Cosmos* and the *Digest,* but now all is seeming peace and harmony.

Dr. Ottolengui of the *Items of Interest* has been invited to my office on three separate occasions to witness exhibits prepared for the profession. In each instance he sent in reply what seemed to me to be a trivial excuse for not attending. He also has failed to make mention of the subject in any issue of the *Items.*

Journals of a lesser circulation at one time, desirous of publishing these articles, apparently warned by the head of the trust magazines, have failed to do so.

The Boston Medical and Surgical Journal, The Philadelphia Medical Journal and *The Cincinnati Lancet Clinic* have treated this matter with commendable consideration, two of these journals having published "Systemic Infection" and two "Pericemental Abscess," with editorial mention.

Oral prophylaxis is that system of dental practice which aims to prevent disease through the arrest and the removal of septic conditions in the oral cavity. It is a method of treatment for the human mouth, which has been abundantly demonstrated as most consistent, most effective and most satisfactory. It is a system of practice in perfect harmony with all accepted theories relating to caries of the teeth, alveolar pyorrhea, stomatitis and pericemental abscess. It is equally in accord with all modern theories relating to any and all systemic infection caused by bacteria or by bacterial influence which originates in the mouth. It enlarges immensely the scope of dentistry and may be made greatly to assist medicine. It should be made known by every means at the command of the profession, in colleges, in society meeting and in dental literature: to students of dentistry and medicine alike. When its benefits are fully realized and its practice enjoined, it will prove a benefit not alone to physical conditions, but by its education in cleanliness it will become an ally to the conservation of morals, especially so in the young.

In his efforts to educate and elevate the colored race, that masterful educator, Booker T. Washington, brought into play a most fitting adjunct to his efforts when he placed the tooth brush in the hands of his pupils in advance of the spelling book.

In view of the fact that our periodical publications practically constitute the literature of the profession, the attitude of these journals toward this subject of oral prophylaxis may very properly be considered in this connection. Did I use the term dental literature? Dentistry may well bow its head in shame at its present so-called "literature." Figuratively, our reading tables groan beneath a surfeit of dental journals, ostensibly "devoted to the interests of the profession," but in reality devoted to the interests of the commercial houses that own and publish them.

In that wonderful vision by the River Chebar, when the clouds were rolled away and Ezekiel was permitted a view of the mysteries of the hitherto unseen, out of the depths of what appeared as a whirlwind came four living creatures having the likeness of a man, but with cloven feet, "as of a calf"; the creature had hands and wings and four faces; the wings were joined and their faces were under their wings. When this creature moved it was straightforward with a motion "as of wheels within wheels." In all this there was nothing more wonderful, or more awe-inspiring, than is the spectacle of the dominion and control today exercised by the Dental Trust over the dental profession. The dental journals without an important exception are owned and controlled by, and in, the interests of the "trust." The proceedings of the more important dental societies, including the National Dental Association, are reported and published, if only it suits the interests of these journals to do so.

The hand of the trust is plainly seen in a marked influence, frequently in an entire control, over the offices and the internal business affairs of the National Association and other dental societies. The trust, through the influence of its journals, has already interfered in the affairs of dental colleges even to the making and unmaking of the professorial staffs. Regardless of the needs of the profession, this great octopus will manufacture, advertise and sell, only such supplies, instruments and appliances as it can control. Like the monstrosity in Ezekiel's vision, it seems to be looking north, south, east and west to its own aggrandizement. If the faces are covered, even as by angel wings, the cloven foot, "as the sole of a calf's foot," is plainly discernible. Propelled by a force as of "wheels within wheels," it moves straight forward to the control not only of dentist's supplies but to the control of all dental literature as well; and this is, as yet, unquestioned and unopposed by the profession. The profession of dentistry is neither free nor independent. We are measurably, at least, slaves to the Dental Trust. We are not, with any fixedness of purpose, marching toward any advanced goal. We are not in keeping with the progress in other lines. To use a military figure, we are on a kind of dental dress parade, simply "marking time."

With an array of modern dental furnishings and electrical office appliances we may, to the uninitiated, appear to be making rapid progress, but to what advanced end no one seems to know or to care. In reality we are making little if any substantial advancement along truly professional lines. The implements and machinery of dentistry, in aid of mechanical manipulation, are being improved; but in the fundamentals of saving teeth, in the betterment of mouth conditions for the prevention of disease, dentistry as taught by its leaders today is in no degree in advance of its status of thirty years ago.

Is it not true that human teeth are wrenched from mouths and thrown away as refuse even more freely than was the case forty years ago? Probably not three-fifths of the inhabitants of this great state, residents of your cities, towns and villages, occupants of your fertile prairies, have ever been the recipients of a service from the profession of dentistry other than that of extracting, nay, not even so much as a kindly word of advice.

Upon one occasion, when I presented to a young man in the prime of life with a good practice, the importance of revising our treatment of the teeth for the prevention of decay, he said: "Oh, yes, Dr. Smith, *I* have no doubt that the prophylaxis treatment will prevent *decay*, but suppose I do stop decay, *what am I going to do?*"

Another, in reply to the question, "What are you practicing dentistry for?" said: "I am practicing dentistry to support my family; I can make more money by filling teeth at three dollars apiece than by trying to force your methods upon patients."

How different to all this is the attitude of medicine to human suffering! It is the glory of the medical profession that it seeks to *prevent* disease and that it extends its benefits not only to those in the higher walks of life, but both medicine and surgery reach out a helping hand to the humblest and most obscure.

The perpetual boasting of dentistry relative to its "advancement and improvements" seems but mockery when we consider the suffering and privations due to pathological states and conditions existing in human mouths today. Advancement in dentistry! What of importance has dentistry really settled and established in the past respecting cause, or procedure? Even caries, the condition with which dentistry has chiefly to do, is unsettled as to its cause or causes. As to modes of practice for the accomplishment of any desired end, nothing is fixed or settled. The future will find much in the present theories and practice of dentistry that is as antipdal to true science as are the laughable customs of the Chinese compared with the more rational thought and customs of Europeans.

Wingrove Cook, a writer on Chinese manners and customs, has said: "It seems almost hopeless to look for any points of agreement between us and the country where the roses have no fragrance and the laborer no Sabbath; where the needle points to the south, and all important buildings are faced the same way; with the Chinaman the place of honor is always on the left and the seat of intellect is referred to the stomach.

"When puzzled, the European scratches his head to collect his ideas; the Chinaman in mental perplexity scratches the antipodal extremity. Taking off the hat with him is a gesture of insolence, and the wearing of white is a badge of mourning."

These and other odd customs of the Chinese are not more opposed to European customs and manners than is much of the present-day dentistry to what should be its teachings and practice.

Permit me here to direct attention to some points upon which I disagree with present professional teachings. I can perhaps best illustrate my meaning by bringing to your notice a view of human teeth from an unusual and perhaps a new standpoint of consideration.

Were we to attempt to give a definition of a tooth from the apparent general estimate of this organ in dentistry, we could arrive at no other conclusion than this absurdity: "A *tooth* is its crown." The main attention and not less the main practice of dentistry have ever been centered upon decay and methods of treatment, in the crowns of teeth.

Not *prevention,* but restoration, is the real meaning of the electrical and other appliances so prominent in the modern dental office. The innate thought of the profession seems to be that the *crown* of a tooth is *practically the tooth.* And here we reach one of the most important points of difference between the general practice and the general teachings of dentistry, and the teachings that should be set forth.

It should be proclaimed with emphasis that *the crown of a tooth is neither the tooth nor the most important part of the tooth.* As between the root and the crown, the root is far the more important. It, rather than the crown, should be the center of attention and effort. *It* is the part to be conserved and preserved. Let it be repeated, the vital, essential part of a tooth is *a living root.*

It is not only important, it is indispensable.

With propriety we may say that a fully formed, vital root, enveloped by a healthy pericemental membrane, should be regarded as the tooth itself; and why? Simply because the dentistry of today can restore any tooth, so long as its normal attachment to the alveolus be undisturbed, even though the pulp may be destroyed and the crown wasted by decay, every feature and every office of the entire normal organ—usefulness, service, anesthetic appearances, all can be restored.

Conversely, divest any individual tooth of its root, or of a part of its root; excise or split it, if you please, retaining its crown in perfect condition, and you have destroyed any continued integrity or usefulness of the tooth.

The *root* of a tooth, although divested of its crown, is still a tooth; but the most perfect crown with a diseased, abbreviated, imperfect, broken, split, pierced, or otherwise injured root, is of little or no further use.

Again: The pulp furnishes life, sensation and nourishment to all the internal structures of a tooth, to its own substance, to the dentine and to the enamel.

Here, I am sure, I shall meet with criticism because this presentation is not in harmony with the accepted teachings of dentistry; and here we reach another point of difference. Dr. Hunt, of Indianapolis, in a paper before the New York State Society, in 1903, declared: "If Dr. Smith's views of enamel life and nourishment are correct, the teachings of dentistry should be revised."

It would be greatly to the credit of the profession if the present presentation of dental physiology respecting enamel sustenation and nourishment could be immediately revised and wholly rewritten.

Enamel tissue is sustained and nourished by the pulp, acting through the intermediary dentine, and in this way alone. Destroy the pulp of a tooth and you destroy the life in the dentine and just as surely the life in the enamel. That there is an *enamel membrane* doing the office work of nourishing enamel in the erupted tooth, is teaching that should be obsolete from this moment. There is no possible source of life or nourishment, for the enamel of a tooth, except that derived from the pulp through the intermediary dentine. Hence with the death of the pulp there is entire cessation of vitality in all of the dentine—both crown and root—and in all of the enamel.

In devitalized teeth we are confronted with a unique and an anomalous condition, a pathological condition without a parallel in the human economy, viz., that of living tissue—the cementum—indissolubly united to dead tissue—dentine. This is a condition which necessarily exists in all devitalized teeth, and this fact demonstrates most clearly what I have elsewhere enunciated, that two separate and distinct sources of life are imparted to every tooth—and it also clearly shows that the utility of a tooth is not dependent on its pulp life.

(The comfort and usefulness of the teeth can best be maintained by maintaining healthful pericemental surroundings.)

Are there not suggestions arising from the anomalous conditions above referred to, which appeal to us in explanation of the phenomena attending the frequent occurrence of exostosis on pulpless roots? Pulpless teeth, molars and bicuspids, are more frequently the subject of exostosis than teeth with living pulps. Is not this new deposit of cemental tissue on pulpless roots the result of effort on the part of the pericementum to increase the thickness of cemental tissues, thus adding to the life and to the security of the root?

Death of the pulp does not necessarily disturb the life in the cementum. Cemental life is derived wholly from the pericementum and the pericemental function is continued and the cementum nourished in a devitalized root practically the same as when the living pulp is performing its function upon the dentine and the enamel.

Destroy pulp life in a tooth, and all sensation and all nourishment ceases in all parts of the tooth except the cementum. Destroy the pulp life, but preserve the pericemental life and you may retain and preserve the entire organ, possibly, during life. It is within the thin covering of bone over the root—the cementum—that the most important life of the erupted tooth resides.

To destroy the pericemental life, while retaining the pulp life, would be to render the tooth valueless; it would no longer be a living organ, but a foreign body to be exfoliated by the life forces within the alveolus. These conditions further demonstrate the fact that there are two separate and distinct sources of life imparted to every tooth and that the pericemental life is wholly independent of the pulp.

Herein is presented a view of the relative importance of the two sources of life to a tooth. On the one hand the pulp life, which has been, and is still, regarded as the all important life, the life to be catered to, and conserved at whatever cost, it may be wholly obliterated, and the tooth still retain every feature of the living organ; on the other hand, obliteration of the cemental and pericemental life of a tooth, means the immediate and complete destruction of the entire organ.

And here I would seek to arrest attention that I may urge greater consideration of the importance of the pericemental life of all teeth!

I would urge to a view of tooth preservation not as it presents from the standpoint of decay alone, but to what is far more important—that destruction that comes to teeth through pathological states of the pericemental membrane.

Someone has said, but I do not vouch for the accuracy of the statement, that 60 per cent of all the teeth that are lost are lost because of disease in some form connected with their roots.

If this statement be not accurate, it is still true that pathological conditions having special relation to the roots of teeth are common, and demand attention and more careful study; and these demands are more imperative today than at any other period in the history of dentistry.

With about thirty-five thousand dentists and over fifty so-called dental colleges in this country alone, even dental *patients* are in pitiable ignorance respecting the real benefits to be derived from enlightened dental service, while the masses have no appreciation whatever of the *value* of human teeth; they are also wholly ignorant of the dangers incident to their neglect.

We are all, in every day life, forced into more or less intimate association with most repulsive mouth conditions, for such mouths are found in those of all ages and in all grades of society.

Fifteen to twenty square inches of tooth surface, covered with a slimy bacterial sediment at a maintained temperature of 98.6 degrees, are sending forth into the atmosphere from the average mouth, in school room, in car, in theaters, in churches, in fact wherever humanity congregates, exhalations and expectorations loaded with the most repulsive, often dangerous, effluvia, to bear fruit in multiplied cultures of disease-bearing germs.

Is it not meet that the attention and effort of dentistry should be diverted from the monotonous rhythm of filling teeth and centered upon the far more important matter of oral prophylaxis—the elimination of disease conditions from the human mouth?

I think it may safely be affirmed that 98 per cent of all the diseases of the pericemental membrane are due to external irritants alone. These troubles are certainly preventable.

The efforts of theoristic writers in the profession, assisted by manufacturers and vendors of the proprietary nostrums which have flooded our offices for the past ten years, has been to establish alveolar pyorrhea as a "constitutional disease."

Now, gentlemen, the sooner such theories, for they are but theories, are overthrown and laid aside, the sooner the dental profession will begin to take rank as a specialty of medicine. I would here reaffirm what I have said in former papers, *alveolar pyorrhea is not in any sense a constitutional disease.*

An eminent teacher in the University of Pennsylvania has declared our D. D. S. degree to be but "the badge of a partial culture." Is this stigma thrown upon dentistry by this distinguished medical professor just? No better evidence is needed by one seeking to establish this allegation as just, than that afforded in the ready and unquestioned acceptance by the profession itself, of the palpable error exhibited by teachers and writers, in their contention that alveolar pyorrhea is a disease of constitutional origin, and that it has its seat in gouty or rheumatic states of the system, or that it is due to the resuscitation of the "specific" taint.

Alveolar pyorrhea is not a disease in the commonly accepted definition of the term disease. It is better defined as an inflammation which begins at the gum margins, at the cervical aspect of the teeth, and extends to the cementum, pericementum and alveolus, involving as it progresses each of those tissues in what Dr. Pierce very properly regards as "surface necrosis."

The prime factor in this inflammation is not internal, it is external; it is not "an original constitutional vice," *it is a local irritant;* it is not from any pathological condition of the circulation, it is from toxic irritants adherent at the point of the inflammation.

The cause of alveolar pyorrhea is not "faulty metabolism" nor any of the other abolisms; the cause is a local incitant—some form of toxic stagnation which is in perpetual contact with the tissues that we have herein seen, to be of such vital importance in the make up and health of every tooth.

Alveolar pyorrhea is in no degree dependent on "constitutional disorders." There are no constitutional or inherited tendencies to it, unless we regard shape, size and placement of the teeth "inherited tendencies." It is a preventable inflammation for its origin is always in uncleanliness and neglect.

The effort of those who teach that it has a constitutional origin has been to shirk the responsibility of treatment and to throw it into the hands of medicine, but medicine is as far astray regarding the etiology of pyorrhea as dentistry is. Both have misconceived the true meaning of the trouble. Medicine is entirely without ability to treat alveolar pyorrhea even if it comprehended it, and dentistry is still groping in the darkness of ignorance.

If this be true, *and it is true*, how important to us as a profession to study more earnestly the phenomena of pericemental life of teeth and the environmental conditions appertaining thereto.

The teeth in their attachment to the alveolus have an articulation in a class by themselves. This articulation is known as gomphosis—like a nail driven into a board. It is formed without cartilage or ligaments; it is wholly devoid of motion. The joints upon which rheumatism and gout fasten are endowed with both cartilage and ligaments and they are always movable joints. Movable ligamentous joints appear to be necessary to the development of both gout and rheumatism and these infections seem to appertain wholly to the cartilage or the ligaments, or to both. Gouty and rheumatic joints are closed joints and when infected they are always the seat of swelling and pain, the latter usually intense. The seat of alveolar pyorrhea is never a closed joint nor yet is the trouble attended with any considerable swelling, and rarely with great pain. Gout and rheumatism are wholly without pus discharge, but a necessary condition of alveolar pyorrhea is the formation of pus. Not over 3 per cent of the cases of alveolar pyorrhea are found in persons who are the subjects of gout or rheumatism, and not a single symptom in gout or rheumatism is paralleled in alveolar pyorrhea.

It is not a matter of wonder that Professor Truman has said: "We are floating in shallow waters." He might very properly have written, We are floundering in the shallow waters of theory, enveloped in a fog of speculation, and misled in observation and practice.

Think of the most recent text-book—"The American Text-Book of Operative Dentistry"—teaching that "pyorrhea is a disease to be *diagnosed* by the dentist but *treated* by the physician," or, as the author of that "text-book" wrote in another place, "Muskowski threw light upon it—pyorrhea—by extirpating the liver of geese (how many geese are required to make one 'liver'?) and found that thereafter they excreted not uric acid, as is the case with the normal goose, but instead of *uric* they excreted large quantities of *lactic* acid and ammonia in quantitative relations of ammonium lactate."

This science (?) you will find in an article entitled "Faulty Metabolism," by E. C. Kirk, D. D. S., Sc. D., Dean of the Dental Department of the University of Pennsylvania and editor of the *Dental Cosmos.*

And we may further read from the same article: "There is a casual relation of pyorrhea to ill health as it is an active factor in the production of a so-called vicious circle which intensifies an original constitutional vice. And these faults of metabolism, of which I have given but a cursory account, are productive of lowered vitality in two ways: first, by depriving the organism of benefit expressed as high vital potential, which is a result of the normal nutritional process; and, second, by producing toxic waste products which accumulate in the blood and still further depress the vital resistance of the cellular elements nourished by the toxic blood stream, and creating thereby a vicious nutritional circle."

May not the foregoing be truly entitled dental science as expressed in the "high vital potential" of Faulty Metabolism? I may not divine your opinion of such science emanating from the supposed fountain head of dental science, and published in the leading trust journals, but to me it seems the acme of nonsensical nothingness.

Proof that alveolar pyorrhea is not a constitutional disease, if further proof be needed, is found in this: In no instance has any constitutional medication alone ever produced the slightest permanent benefit to the trouble. Proprietary medicines, compounded by men who know nothing whatever of practical dentistry, and even less of alveolar pyorrhea have been "written up" by men with titles, hired to do this work and foisted upon the profession in carloads; and dentistry, because of a feeling of incompetency and helplessness, has been induced in some instances to prescribe them. Vain hope of relief! In every instance the results have been the same.

What possible benefit can be expected from "constitutional medication" prescribed by the dentist, or from the attempt of a dental operator to "regulate the diet of a patient."

In ministering to a local trouble we must *remove the cause* of the trouble, and provide such local medication as will assist in the re-establishment of normal healthy nutrition.

The removal of the cause of alveolar pyorrhea may be very simple or it may be complicated and difficult, depending wholly on physical conditions. The operation will be modified by the depth and extent of the inflammatory process about the roots, the location and shape of the teeth and the number and character of the roots (whether conical or crooked, bifurcated, difficult or easy of access). A pyorrheatic mouth always presents conditions demanding careful examination and careful diagnosis.

My observations have led me to the belief that fully one-half of present practitioners are utterly incompetent to even distinguish, much less judge, pyorrheatic conditions. Consultation has again and again been sought over the simple uncovering of the thin labial portion of perfectly normal superior cuspid roots, especially when this condition extended to the buccal surface of the bicuspids and first molars. These were supposed cases of alveolar pyorrhea. They exhibited simply alveolar and gum "recession," having no pyorrheatic or pathological relations.

While a consistent prophylaxis treatment in the beginning might have prevented necrosis of this thin alveolar plate covering the root at this point, the injury is more apparent than real. Unattended by pus discharge as it always is, the necrosis is arrested as it approaches the thicker and stronger parts of the alveolus, before appreciable injury has been done, save in giving the appearance of "gum recession." Such cases are not conditions of alveolar pyorrhea. There never was and never will be a case of alveolar pyorrhea without some source of septic infection in undisturbed relation with the pericemental membrane at the point where the pyorrhea exists.

What possible benefit can come from loading the *stomach* of a patient with "Alkalithia" or any other "ithia" of which neither medicine nor dentistry knows aught save that, *for profit,* it is forced upon our attention by some manufacturing concern?

In pyorrheatic cases, however extensive or virulent they may be, if the teeth are *extracted,* the pyorrhea is immediately cured. If it were caused by constitutional gout, rheumatism or syphilis, as has been alleged, the removal of the tooth would have no effect whatever upon it. These observations establish for all time the fact that pyorrhea is distinctively and wholly a local disorder.

There can be no plainer or more certain evidence that pyorrhea is a local inflammation than the fact that it yields to local treatment alone. No constitutional medication, dietary, electrical, or X-ray treatment, has ever benefited it in the slightest degree .

If additional testimony were needed, it is to be seen in this: Pyorrhea is seldom or never found in childhood and very rarely below the age of puberty. It is an inflammation that belongs to adult life. And again, after an experience of more than ten years of distinctively prophylaxis work for the eradication of infection in the human mouth, I have not, within that period, met a failure in treatment nor found a mouth, however predisposed to pyorrhea, that could not be kept from all tendency to recurrence. The keeping of irritants from the pericemental membrane and the consequent keeping of the gums, the alveolar and cemental tissues in a healthy condition, by means of the prophylaxis treatment, arrests all tendency to pyorrhea. Thus again is presented the importance of giving required attention to the pericemental life of the tooth.

The local benefits resulting from intelligent prophylaxis treatment are many and may be noted in the order in which they impress the observer.

The gum tissue, freed from the perpetual influence of a toxic irritant, without exception, loses its unnatural, deep red and purple colors, and is relieved from all congestion. The irritated and distended capillaries are thus enabled to regain tonicity, and the gums return to a normal pink color with beautiful striations and natural festoons. The abnormal bleeding and the hyper-sensitiveness of gum tissue is quickly corrected by the treatment and the gums become tense and hard and assume the normal low grade sensibility which characterizes them in health.

Dr. Talbot has written upon what he calls "gingivitis," and lays great stress upon what seems to be a term of his creation. More recently others have followed him and in their writings speak of "gingivitis"; I myself, in one or two instances, have used the term, intending to denote an irritation of gum tissue bordering on inflammation along the festooned margins, especially between the lower anterior teeth.

Since I commenced this paper there has come to me a copy of the proceedings of the Massachusetts Dental Society held in Boston, June 7, 8, 9, 1905. In it is a paper entitled, "Interstitial Gingivitis," by Eugene H. Talbot, M. D., D. D. S., of Chicago. I read the paper eagerly, feeling assured that it would give a full and clear explanation of what the term "gingivitis" is meant to define.

In the paper Dr. Talbot says: "The alveolar process is the most sensitive structure of the human body. It is therefore a greater index to systemic disturbance than the human eye."

We shall not do Dr. Talbot the injustice to suppose that he intended his auditors and readers to accept this statement seriously, for we all know that there are many tissues of the human body far more sensitive than the "alveolar process," and many of them far better indices of systemic disturbances than it. Systemic disturbances registered in alveolar process! How is this indicated? When does the registry appear? Who knows of it, and what diagnostic benefits come from it if it could be so? I am glad Dr. Talbot is a doctor of medicine, for that compels the medical profession to share with us the responsibility for such an impossible proposition. Now we may listen to the difference between what he calls "Interstitial gingivitis" and "pyorrhea alveolaris." I quote for your benefit, *verbatim,* from his paper:

"What," he says, "is interstitial gingivitis? What is pyorrhea alveolaris?"

"A first tooth erupts. That it may absorb alveolar process to allow it to come through the tissues, it sets up an interstitial gingivitis. There is no pyorrhea alveolaris."

"A second tooth erupts. Interstitial gingivitis is set up to absorb the alveolar process. There is no pyorrhea alveolaris. Teeth are extracted, interstitial gingivitis is set up to produce absorption and fill the cavity with new bone. There is no pyorrhea alveolaris. Teeth are wedged to obtain room for filling; teeth are regulated, an interstitial gingivitis is set up. There is no pyorrhea alveolaris. Crowns and bridge work are inserted, the gold band is carried under the gum margin; interstitial gingivitis is set up. There is no pyorrhea alveolaris. One, two, three or four roots carry a piece of bridge work containing two or ten crowns; the extra strain upon those roots sets up interstitial ginvititis. There is no pyorrhea alveolaris."

"Artificial dentures set up interstitial gingivitis. There is no pyorrhea alveolaris. Tartar, foreign deposits, and local irritations about the teeth set up interstitial gingivitis. There is no pyorrhea alveolaris. A root is filled; some of the filling material extends beyond the end of the root, interstitial gingivitis is set up. There is no pyorrhea alveolaris."

"These inflammations may continue for a life time or until the tooth has exfoliated; if there be no pus germs in the mouth, pyorrhea alveolaris cannot take place. Every one has interstitial gingivitis; only about 10 per cent have pyorrhea alveolaris. Interstitial gingivitis is a disease; pyorrhea alveolaris is not a disease but the result of a disease. The two pathologic conditions are separate and distinct. In the study of the two conditions, the terms interstitial gingivitis and pyorrhea alveolaris should be used in their proper places."

"In some of the lower vertebrates, some snakes, elephants, etc., there is a continuous shedding of teeth. Certain teeth develop, are used a short time, are lost and new ones take their place. This is continuous throughout the life of the animal. Man has two sets of teeth; the first set is lost, and a second set takes its place. These in turn will be lost if he live long enough. As soon as the alveolar process has obtained its growth (in degenerates it commences much earlier) interstitial gingivitis sets up and there is gradual absorption of the bone from the start. Nature is trying to shed the second set of teeth. This process I have called osteomalacia or senile absorption, and it is atavistic. While the pericemental membrane becomes inflamed in interstitial gingivitis, the alveolar process is the supreme structure first to be considered in this disease. Hence the reason little or no pain is experienced."

Why we ask is this if the "alveolar process is the most sensitive structure in the human body"? "Three forms of bone absorption enter into the destruction of the process—halisteresis, Volkman's perforating canal absorption, and osteociata."

"This disease is found in all animals, especially wild animals in captivity. Both the house and the tramp dog are excellent animals in which to study it."

If now we should ask ourselves what is "interstitial gingivitis" I think it would be difficult to frame a definition or even to divine the meaning of this term from what we have read.

I have been in practice over forty-five years and an habitual reader of dental literature, and I confess to you, gentlemen, that if you were to ask me the meaning of "interstitial gingivitis" or what the disease, if it be a disease, is, I should be compelled to answer, "I do not know."

I am too old to go to the "wild animals in captivity" or even to the "tramp dog" to study it. Whatever "interstitial gingivitis" may be, unless it be forced to mean pyorrhea, it is certainly a condition which produces nothing more serious than the irritation of gum tissue at the cervical margins of the teeth.

If Dr. Talbot will try the oral prophylaxis treatment, which he confessed in the discussion of his paper that he knew nothing of, he will be rejoiced to find a speedy and complete cure for his gingivitis malady.

There is abundant proof that the prophylaxis treatment relieves such irritations as Dr. Talbot has referred to, and that under this treatment, the gums become tense and hard with no further tendency to irritation, bleeding or recession.

Without this treatment the circulatory vessels of the gum tissue, because of the irritative matter that accumulates upon the teeth, become engorged and distended; thus they lose their tonicity, and, as a result, when disturbed, as in brushing, or wounded under instrumentation, they bleed disproportionately and unduly. This condition is a source of great discomfort and great annoyance, especially when operating upon the teeth at their cervical portion.

The institution of the oral prophylaxis treatment removes all irritants, enabling the coats of the vessels to regain their tonicity; thus they gradually return to their normal condition, and not only does the bleeding cease, but the hyper-sensitiveness of the gum tissue is entirely relieved. Gum tissue in normal condition is by no means highly sensitive tissue; it is endowed with what we may term a low grade of sensation, and wherever it is found in a *sensitive* state, that condition is wholly abnormal.

The prophylaxis treatment relieves both the sensitiveness and the tendency to all bleeding, so that operations at the cervical margins may be performed with comfort and satisfaction.

This is so eminently true that it is my common practice in operating upon labio-cervical cavities on the upper jaw, to discard the rubber dam in all cases in connection with patients who have been for a time under this treatment, even when filling with gold.

Another pathological state prevented by the prophylaxis treatment is the formation of pericemental abscess. Those who have followed my writings have noted the very serious nature of this infection. It is a condition in connection with the roots of teeth that is far more common than has hitherto been supposed and it is absolutely incurable.

Pericemental abscess is without exception due to an external irritant, the point of attack being the cervix of the tooth and the deposit a solid. The specimens in my possession clearly demonstrate this fact; they also establish it as incurable. In but two nstances have I ever attempted the preservation of teeth upon which a pericemental abscess was known to exist. These teeth, while they are loose and appear as if set upon a cushion, are comfortable and doing partial service. They are being retained experimentally. All others have been extracted.

The benefit which should appeal to dentistry most urgently, however, is the power of this treatment in the prevention of decay. Do you ask me, "can all decay of the teeth be prevented by this treatment?" My reply, speaking for the deciduous teeth alone would be, "yes." Experience with these teeth, surely indicates that decay when it exists, can be arrested by filling, and subsequently all decay prevented. In permanent teeth from 70 to 90 per cent of all new decay can be prevented through the treatment.

Possibly you ask "why not all decay?" Because there are in many mouths inaccessible points which no treatment can reach with a frequency sufficient to prevent disintegration, and there are teeth of such imperfect formation that they yield quickly to decay through a septic environment over which dentistry can have but partial control. No human agency will absolutely *prevent* all *decay.*

Decay means a chemical activity whereby the life forces of the tooth are overcome and the lime salts of the enamel and dentine are overpowered and broken down by other and stronger affinities. Decay is the result of a chemical force operating in the menstruum in which the teeth are perpetually enveloped. It begins always on the *exposed* surface of the tooth, usually at or near some point of contact with an adjoining tooth. If this be correct—and who shall gainsay it?—what more reasonable, what more scientific, than to assume that if unfavorable environmental conditions are frequently altered and the surfaces of the teeth positively and frequently released from the power of the chemical agents operating to destroy them, that decay in human teeth will be retarded and prevented?

And this is in perfect accord with all my clinical experience in prophylaxis work in the past eleven years.

The explanation, once we understand the end sought, is very simple, and the results are as certain as that night succeeds the day. Is it not worth the effort of dentistry to prevent three-fourths of the decay in human teeth? It seems to me that it would be one of the grandest achievements at which the dental profession could arrive. Think what it would mean if dentistry with an intelligent, prophylaxis treatment would prevent the suffering that must inevitably follow existing neglected conditions!

Place such an achievement, if you please, beside the simple operation of filling a cavity in a tooth. A single tooth may have as many cavities as it has faces and angles; the filling of these cavities involves labor on the part of the operator, suffering on the part of the patient and when completed what has been accomplished? A single tooth has been placed in a very uncertain condition of preservation.

A prophylaxis treatment, consuming not more time than a single filling, places the whole mouth in a regenerated condition, preventing decay, preventing diseased conditions of the gum and pericemental membrane, and preventing many constitutional troubles and disease of which neither the dental nor the medical profession at present have any just appreciation.

Let me tax your patience for yet a few moments while I give the history of one of the most interesting cases that has ever presented itself in my practice.

It is just two years this present month since a lady of most dejected appearance came to me, recommended, as she said, by Doctor B., one of the most widely known practitioners of medicine in our city. The lady prefaced her history with this remark: "Dr. B. said to me, you go to Dr. Smith, for I believe if anybody can help you he can. You will find him a very arbitrary man, and you will be required to do just as he tells you."

The history of the case is this:

The lady was an American just returned from a residence of some two years in Rome. The ship's surgeon to whom she applied on her return voyage was so injudicious as to tell her that "she had cancer of the mouth"; this gave her a great nervous shock, intensified her mental anxiety and increased her sufferings. Immediately upon landing she consulted one of the most prominent physicians in the city of Philadelphia. Reciting her case to him, he gave her very little comfort when he said "he would not pronounce her trouble cancer, certainly not until after a few days' treatment."

I cannot follow the lady in her visits to the eight physicians and dentists whom she consulted before coming to me, none of whom gave her a positive diagnosis or afforded her any comfort or relief.

Every *dentist* declared her trouble to be a case for the physician and not a condition to be even considered by a dentist.

My examination revealed the following conditions: First, swollen and greatly discolored gum tissue over the whole of the incisal region of the upper jaw, beginning with the lateral on the left side and extending over the right cuspid, the gum tissue of this region was tumified, swollen and elongated, presenting a mass of engorged tissue of a dark blue color, covering about one-half of the crowns of the front teeth. The lips were swollen and presented the appearance of a violent alveolar abscess. Along the marginal gum tissue of the entire lower jaw was a line of bright red color as of active inflammation, but without any considerable swelling. Looking further into the mouth, the tonsils were swollen to more than twice their normal size; the tongue was furred with a greenish yellow coating, parts of it about the thickness of thin blotting paper; a deep fissure extended from the base to the tip of the tongue. The right sub-maxillary gland had three nodules in it, one as large, perhaps, as a pea; the nodules in the left were not as large, but were distinctly marked. Extending over the arms and body were irregular patches of dark pigment, in appearance presenting the eruption of measles without the concentric character of that eruption. There was no fever, but great mental anxiety and nervous irritability.

This lady would sit by the half hour holding the upper lip off from the swollen gum tissue, "to let it cool off," as she said. The right upper central was discolored to such an extent that I was unable to decide until I removed the remains of a filling and found it alive whether the pulp was devitalized or not.

Now, gentlemen, what would have been your diagnosis in this case? The medical profession had offered no hope, no encouragement whatever, and dentistry, standing aghast in its presence, had folded its hands and slunk away.

Instrumental examination satisfied me that this whole train of constitutional disturbance—the tonsilitis, the coated tongue, the nodular glands, the skin pigment, the extreme nervousness, the loss of appetite and imperfect digestion, were due to the continued *ingestion* of mouth toxins supplied from the general septic conditions of the mouth, especially that of the swollen and pyemic gum tissue. My treatment was to be to stop the source of supply of these poisons. I said, "Mrs. C., I can help you." You should have seen the look of gratitude pictured upon that lady's face!

The treatment consisted simply in placing all the teeth and the whole mouth in an asceptic condition, first relieving the teeth of external deposits, on none of which were masses of solid tartar, but what was far worse, an accumulation of decomposed mucoid, viscid matter persistently excreted and inevitably held by the swollen gums in contact with the tissues where the greatest inflammation existed. This muco-purulent matter was found not only on the front teeth, but on all the teeth.

The details of treatment are given for your benefit. I saw this lady every day for two weeks, giving her only the ordinary prophlaxis treatment. At each sitting I made free application of phénol sodique to the gums. I also gave to her a prescription of Zhongiva as a rinse for the mouth to be used four or five times a day. To relieve the tonsilitis I gave douches in phénol sodique each day, and mopped the tongue thoroughly with the same preparation. For this purpose I employed wads of Japanese asborbent paper saturated in the medicament. I also applied tincture of iodine at every sitting to the swollen, discolored gum tissue.

The only constitutional treatment was an aperient to insure free movement of the bowels. I purposely avoided the use of anything which could be called "constitutional medication," that it might be made plain to the medical as well as to the dental profession that this most serious case was of local origin and demanded local dental treatment alone.

In less than two months from the time of instituting treatment, I had removed all irritation due to accumulations. I had restored to normal the ragged, irritating cavity margins, by placing the teeth in perfection conditions with fillings and crowns, the swollen and discolored gums had returned to a pink color with restored festoons and beautiful striations and a perfect condition of health; the tonsils were reduced to their normal size, the tongue was perfectly clear. The nodules in the sub-maxillary gland were taken up as was the pigment which had been deposited in the skin. All nervous strain had completely disappeared and the mental condition of the patient was that of calmness and confidence.

The restoration of the mouth conditions was perfect, and the lady on leaving my office, about October 25th, said: "Dr. Smith, I consider myself perfectly well."

This, gentlemen, is perhaps the greatest achievement which I can record to the benefits of the oral prophylaxis treatment.

If time would permit, I might recite to you many cases of the complete restoration and cure of alveolar pyorrhea and stomatitis. I close with the record of one interesting case that came from a medical practitioner.

Some two and a half years ago a lady presented herself as coming from a physician who makes a specialty of stomach troubles—a stomach specialist in one of our universities. He sent me a note saying that the lady was under his treatment for a disordered condition of the stomach and he desired her to have some artificial teeth to enable her to eat better.

An examination of this case disclosed a good set of teeth, upper and lower, but with the pyorrheatic condition about a number of them; there had been so-called dental operations, loose teeth attached to sound ones, an apology for a piece of bridge work rendering comfortable mastication impossible, and other operations which placed her mouth in a most unsavory and uncomfortable condition. To me it was not a matter of wonder that the lady was suffering from indigestion and lack of food assimilation, as it was impossible for her to masticate with any comfort.

Before commencing operations, I replied to the physician that I found the lady's mouth in a very serious condition, but not demanding more teeth for the purpose of mastication; what she needed was relief from pyorrhea and to have her mouth placed in such condition as to make mastication with the teeth she then had possible and comfortable.

He replied "that he would be glad to have her mouth in a healthy condition, of course, but she must have more teeth for the better mastication of food"; this, however, he suggested, "could be done later."

My first operation for the lady was by no means to give her "more teeth," but to relieve her of the piece of bridge work as well as of some natural teeth which were so loose as to preclude the possibility of restoration and were wholly preventing comfortable mastication. I discouraged all suggestions respecting artificial teeth and directed my efforts to restore to a comfortable condition the teeth she had. When she was able to masticate her food with comfort, which she could do in less than a week, there was no further complaint that she had not teeth "sufficient for mastication."

I have kept up the prophylaxis treatment for this lady regularly from the first, with the result that her mouth conditions are completely restored; pyorrhea has been completely eradicated and today, after two years' treatment, there is entire relief from her stomach troubles and her general health is fully restored.

Enlightened, intelligent dentistry will yet supply the missing link in the medicinal treatment of tonsilitis, many throat and stomach troubles, indigestion, gastro-intestinal disorders, diabetes, and perhaps epilepsy and cancer, which in many cases are undoubtedly the direct results of pyemic states of the human mouth due to septic conditions of the natural teeth.

THE ORIGIN AND TREATMENT OF RANULA.*

BY TRUMAN W. BROPHY, M. D., D. D. S., CHICAGO, ILL.

To present a paper on a subject covering so broad a field in surgery, and to do justice to its varied phases, would consume more time than I have assigned to me; consequently I invite your attention to the abnormalities of the floor of the mouth in the form of cysts, so frequently met with in the practice of oral surgery.

The term ranula is generally understood to mean a cyst in the floor of the mouth, due to the obstructions of the ducts of the submaxillary and sublingual salivary glands. The obstruction is due to the adhesion of the orifices caused frequently by calcific deposits on the lower incisor teeth or calculi formed within the duct proper.

Wharton's and Rivinus', as well as Bartholin's ducts may be involved. The mucous membrane covering the fluid contents of the cyst is smooth, fluctuating and frequently of a bluish color, as it resembles the appearance of the belly of a frog; hence its name "ranula."

---

*Read before the Chicago Odontographic Society, October, 1906.

Ranula is defined by many authors of high repute to embrace those cysts formed by the dilation of the anterior lingual glands known as the Blandin-Nuhn glands, situated beneath the tongue on either side of the foramen near the apex.

This form of ranula differs greatly from the condition due to the obstruction of the salivary ducts, as it penetrates into the intermuscular spaces in different directions; and the ducts of the salivary glands are outside of the cyst, having no other relation with it than proximity. The contents are a thick, glairy fluid, viscid mucus, varying from an amber color to a yellowish, with brown granular bodies, epithelial cells, and hyaline corpuscles.

Ranulæ are usually only unilateral, whether they are of the salivary ducts or otherwise. They are globular in form beneath the tongue on one side of the frenum, but as they distend they project over to the opposite side, down into the pharynx, and under the jaw, exhibiting a large swelling externally. They usually occur between the ages of twenty-five and forty, although I have treated one case of salivary ranula in an infant six months old.

Differential diagnosis of the two forms of ranula is not usually attended with difficulty. It is essential, however, to have a clear understanding of them, as the treatment of one would not be proper for the other.

True ranula, or the dilation of Wharton's duct, is to be observed not only by the elevation of the tongue on the side involved, but the sublingual or submaxillary gland may become dilated to an enormous extent, exhibiting a large swelling beneath the chin or the angle of the jaw. In the normal mouth the saliva may be seen to escape from the ducts beneath the tongue in little streams from papillæ which contain their orifices. In the patient having ranula the papillæ not infrequently atrophy, and by excluding the saliva from the other ducts than those involved by the ranula the surface of the mucous membrane, along the line from which the saliva formerly made its exit into the mouth, will be found smooth and dry. No orifices can be found. No saliva enters the mouth from the glands whose ducts are closed.

The tissues fluctuate readily in true ranula, while in the form of ranula not embracing the salivary ducts, or dependent on their failure either from salivary concretion or products of inflammation, the surface is not infrequently thick and firm, without fluctuation.

The exploring needle reveals a thick fluid, occasionally intermingled with pus.

TREATMENT.

The treatment of ranula of either form is operative interference. Calcareous deposits within the ducts and the contents of the cyst should be removed, and measures employed to establish permanent openings through which the saliva may escape into the mouth.

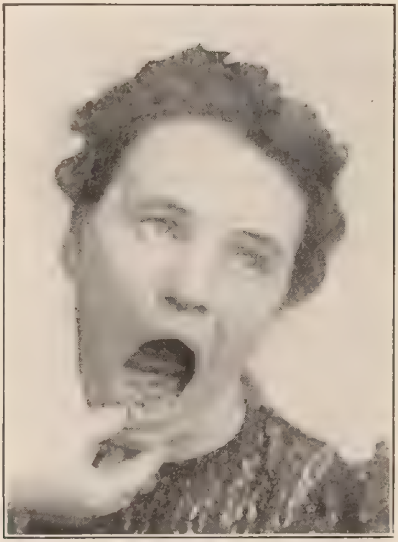


Fig. 1.

To evacuate the fluid by removing the obstructions of the ducts, calcific deposits or adhesions may in certain cases be sufficient to effect a cure, but every surgeon of large experience knows that after opening the cyst and removing the fluid often there will be a recurrence of the cyst. I have known a salivary cyst or true ranula to have been opened five times, and as often recur.

The introduction of the seton makes the escape of the saliva more certain, but a seton keeps the tissues with which it comes in contact fresh, and union of these fresh surfaces is almost certain to take place following the removal of the seton.

Removal of a section of the cyst wall cannot be relied upon to establish permanent drainage, as such an opening is very likely to close. It is necessary, therefore, to employ means by which an opening may surely be made permanent. This I have accomplished by making a small silver tube and perforating it with holes; then bending it so as to form a ring about one-half inch in diameter. This is an open ring, one end of which is carried into the cyst and out through the mucous membrane and telescoped into the other end, thus uniting the ends of the tube and completing the ring. The perforated ring thus introduced will admit the saliva within the cyst and allow it to escape through the tube and into the mouth. The ring must be rotated daily, else the tissues may fill the openings in it, thus defeating the object of its insertion.

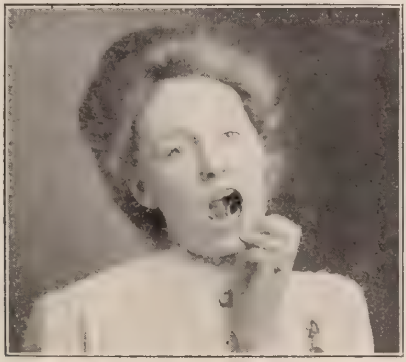


Fig. 2.

The tissues around the ring will become smooth, and a few weeks only will suffice to establish permanent openings, after which the ring may be removed and the saliva will escape through the openings so perfectly formed around the silver tube.

In the treatment of many cases of salivary ranula I have found the drainage more effectually accomplished by the use of the silver perforated tube ring than by any other means.

(See cut.)

The treatment of ranula not involving the salivary ducts or glands is usually best accomplished by opening the cyst, evacuating its contents, and removing its wall.

CASE OF FRACTURE OF INFERIOR MAXILLA, WITH TREATMENT.*

BY ARTHUR D. BLACK, M. D., D. D. S., CHICAGO, ILL.

The case I have to present is one of a double fracture of the inferior maxilla, which is a little out of the ordinary; enough so, I hope, to be of interest. The patient, Mr. Charles Martin, who is here this evening, was struck a fist blow on the right side of the jaw by a hold-up man on the night of June 27, 1906. He came to the school on the 29th, with his face considerably swollen about the chin and the angle of the jaw on the left side. Examination revealed a fracture at the symphysis, the break being between the roots of the central incisors, and extending almost directly through to the lower border, deviating slightly to the right of the median line; also a fracture in the region of the position of the second lower molar on the left side. The patient had previously lost all of the lower molars on both sides. This latter fracture was an oblique one, the break at the surface on the buccal side being fully three-fourths of an inch anterior to the break at the surface on the lingual side. In the other direction the break extended straight through from the alveolar ridge to the lower border. I think the line of fracture in both of these breaks is unusual, the one almost directly through the bone at the symphysis, the other so very oblique.

Treatment. As the patient had taken no solid food since the wound was inflicted, the teeth of the lower jaw were at once wired to those of the upper by Dr. Gilmer's method, and the patient was placed in care of one of the students. As a result of the wiring the teeth were held in proper occlusion, and the ends of the fracture at the symphysis were approximated, but on account of the obliquity of the posterior fracture, the traction of the masseter and temporal muscles caused the posterior fragment to come forward, overlapping the anterior fragment. As there was infection at this point, no further attention was paid to the bone, but an incision was made for drainage and the wound was irrigated daily.

The wires were removed from the teeth on July 20th, having been in place three weeks, and there was good union at the symphysis. At the posterior fracture, there was a considerable area of necrosed bone, and a constant discharge of pus. Better drainage was established by an incision inside the mouth, but the cavity was too deep for sufficient drainage. On August 8th, the patient was anesthetised and an external incision made below the lower border of the bone, so that the wound could be irrigated through from inside the mouth.

---

*Presented before the Chicago Odontographic Society, Tuesday evening, October 16, 1906.

On August 15, patient was again anesthetised and the ends of the bone were drawn together and held by a silver wire. There had been nearly half an inch of the bone lost on account of the necrosis, and to get as good occlusion of the teeth as possible the posterior fragment was drawn forward and lifted considerably higher than the anterior fragment. This prevented the anterior fragment from being drawn backward as far as it otherwise would have been. It will be noticed in examining the patient's mouth or the plaster model that there is quite a deformity in the union of the bone in this position, the posterior fragment being so high that the upper molar almost touches it. It will also be noticed that the occlusion is excellent, which would not have been possible without the deformity in the union of the bone. The median line of the lower jaw is less than the width of the central incisor to the left of the upper.

The patient remained in the hospital three weeks after the last operation.

I also present a skiagraph of this jaw, showing the silver wire in place. The skiagraph was made yesterday by Dr. A. B. Allen.

MISTAKES I HAVE MADE IN PORCELAIN.*

BY L. L. DAVIS, D. D. S., CHICAGO, ILL.

Experience teaches more emphatically than books, and our mistakes should assist us in our lesson. This applies to all work in our profession and especially so in the subject to be discussed in this brief paper.

If, by the recounting of a few of the errors I have made, it is possible to point out what should be done and what *not* done, the object of this paper will have been accomplished.

---

*Read before the Northern Illinois Dental Society, October, 1906.

Probably the first and greatest mistake made by me in the line of porcelain work, was my criticism of Dr. Land's first operations. The dentist of today owes a great debt to the gentleman who strove to bring porcelain restorations—in place of gold—to the notice of the profession, and I take this opportunity to pay my respects and add my tribute of praise to one who labored hard twenty, or more, years ago to advance the ideal and artistic abilities of his confreres, also making it possible for men of the present day to attain prominence and reputation in porcelain inlay work.

Taking the subject in the various stages, the first mistake I made was in faulty preparation of the cavity. This is one of the important features in all our operative work but especially is it so in porcelain work, and until the operator has solved this problem his efforts cannot produce the best results.

Next: I found my method of adapting the platinum to the cavity wall a mistake. Here, also, only experience can teach what is the best way for each individual. Some may accomplish the best results from cavity impression and model, others prefer to obtain their platinum matrix direct from the tooth. Whatever method employed care should be taken not to harden the metal by too much burnishing and prevent warpage by frequent annealing.

My early attempts with porcelain were marred by the injudicious use of the material. Too much body in first bake—with the resultant shrinkage of the mass, was a stumbling block to satisfactory results, and I credit to Mr. Brewster my knowledge in overcoming this difficulty.

Next: The lack of proper discrimination in selections of enamel colors was certainly a grievous error. The changes that occur under varying conditions of the light is confusing to many an earnest worker and can only be surmounted by long continued study and experimentation in this special feature of the work.

But, supposing that you have prepared the cavity aright, applied your knowledge correctly concerning the building up of the body and selected the proper shades of enamel for the finish, you will find you are a long way from making a perfect operation if you do not understand your furnace thoroughly. More good effort is wasted by an imperfect understanding of the capabilities of the furnace than any other stage of the process. Not to have complete control and a thorough knowledge of the furnace will abort your best endeavors. Presumably, it is because of this lack of knowledge of the electric oven by the majority of the profession, that expert furnace men and dealers have evolved the automatic, pyrometer governed furnace now placed upon the market. With this kind of furnace, the baking takes care of itself, and produces good results even though the person using it may be a tyro in porcelain art.

Yet even this furnace does not satisfy the expert, as there is a variation of time in the first baking and the subsequent ones, unless the oven is allowed to cool off between each baking.

It is therefore advised to use more than one furnace if you wish to attain perfection. If you have but one, study its little eccentricities, the variations of current, the exact time necessary to get the required heat; test it from time to time as the muffle undergoes change in size and thickness by continued use; in short, master all its changes. In this way you may hope to attain some degree of perfection in porcelain work.

THE DEVELOPMENT OF THE PORCELAIN CROWN.*

BY B. H. BIGLOW, D. D. S., ROCKFORD, ILL.

"Good things bear repeating," said the young man as he kissed his best girl good-night for the forty-ninth time.

This paper, as the title indicates, is to touch on some things past and present, and more especially to try to repeat some good things. To know how to make a crown or a plate, or insert a good filling, etc., is not all there is to the profession of dentistry, as some seem to think. An educator has aptly put it that the bed clothes on our bed would be of little use to us unless they more than covered our bed. There must be a good margin all around, enough to tuck in, if they are to serve us well. And it suggests that no matter in what line of business one is engaged, one needs a working margin. We all hope to obtain more than a livelihood from our profession. We want a good name, respect and honor. To gain these, one must be more than a "tooth carpenter." We need the working margin. History gives a good foundation on which to work.

---

*Read before the Northern Illinois Dental Society, October, 1906.

Writing upon the value of dental history, Dr. C. N. Johnson has stated: "The deeds of our ancestors are not only important as an index of the early development of the profession, but they are frequently very instructive in recording the evolution, rise and fall of many theories which have absorbed the attention of the men of those days in the same lively manner that we find manifest today when anything new is advanced. We can read many an instructive lesson from the experiences of the pioneers."

It is hoped that this paper will start a discussion which will be helpful and awaken a desire to know much more about the evolution of the porcelain crown than can be given in the time allotted for this subject.

According to the "American System of Dentistry," the history of porcelain crowns dates back to 1800, when they were first made in France and were known as mineral teeth or incorruptible teeth. The porcelain used at this time was opaque, and the color being uniform, they lacked that live tooth appearance which makes a porcelain crown so desirable now. The crowns then were not much more than blocks of porcelain shaped something like a tooth with a dowel hole, as it was called, for the insertion of a wooden pin. They needed much grinding to be fitted to a root, and evidently they were not very popular; however, there were some who saw good in them, and they were gradually improved.

Mr. Samuel Stockton, who is called "the father of the dental manufacturing business in America," started the manufacture of porcelain crowns for the profession about 1830, and they soon gained a reputation which established them on the market.

In Harris's Principles and Practice of Dental Surgery, the edition of 1850, it is given that the objections raised to porcelain teeth are "a want of congeniality between them and the mouth; they being better conductors of caloric than bone, and consequently more liable to become cold when exposed to the air." But he believes the advantages are greater, such as "they do not contaminate the breath or become in any way offensive," "they never change their color," "they are not acted on by the chemical agents found in the mouth, and hence the name incorruptible teeth has been given them." These porcelain crowns which were being used became known as pivot teeth. The wooden pins which were used then were much shorter than the average metal pin used now. The crowns were much like the loose pin crowns on the market today, except there was no concavity or shoulder about the dowel hole.

The dentists had their troubles in those days as well as we have now. Sometimes in driving a hickory pin into the porcelain tooth the porcelain cracked and sometimes, after driving the pivot tooth into the root, the wood swelled so much that the root split. After all, these crowns gave good service, often lasting many years; a dentist who used them in days gone by says he has known of them lasting twenty years.

Wooden pins were not always used for these crowns; a metallic pin was in vogue, too. The metallic pin was fastened in by screwing it into a little wooden tube which had previously been inserted into the dowel hole of the crown, or another way was by placing the metallic pin into the crown and flowing enough soft solder about the pin to secure it.

In 1839 Mr. Lukyns in England was granted a patent for crowns with spring pivots. In 1849 Dr. Clark patented a split spring pivot which was inserted into a tube, the tube to be screwed into the root before setting the crown. Then there was a crown known as the Foster crown, which was secured to a root by a screw passing through the crown on the lingual side and embedding itself in the root canal.

Again, referring to Dr. Harris in 1850. He recommends when a metallic pin crown is used, a plate tooth is preferrable to those which are made expressly for pivots, the tooth having a gold floor and backing with a metallic pin. This style of a crown was practically like a Richmond crown without a band.

To numerate all the various crowns that have sprung from these simple ones would be an endless task. Doubtless many of the varieties inserted have never been recorded. Probably some have been set and born, and blushed while their fragrance was not wasted on the desert air. A friend and classmate of mine while in dental school made and set a pinless crown; about two days later the patient returned with a grin on his face which showed the crown was missing. When asked what happened, he said, "I swallowed it when eating breakfast this morning." My friend said, "Well, I suppose it is up to me to make you another," and an appointment was made for doing the work. The following morning the man was back again with a broader grin on his face, saying, "I guess you don't have to make me another tooth, Doc," holding out his hand with the delicate morsel within; "she ain't hurt any, is she, Doc?"

A crown which is universally known and has been on the market many years was invented and patented in 1885 by Dr. Logan of Pennsylvania. We are all so familiar with the Logan crown it needs no description here; but when the Logan first made its appearance it had a round pin. About the same time Dr. Richmond invented a crown very much like the Logan, with the exception it had a square pin and it had a groove in the porcelain from the pin to the lingual side for the free escape of the cement or whatever material was used for setting the crown.

The improved Logan crown has been the most popular factory-made crown for many years. If it will continue to be so, is another question.

Unfortunately for our patients and for us, many patients must think about their pocketbooks when having their teeth crowned. In such cases, the Logan, when fitted to a strong root with the joint under the gum line and a gutta percha washer used to fill up the defects in the joint, will make a serviceable crown. Moldable porcelain has been suggested as an excellent thing to build up and secure the perfect adaption of a crown of this kind, to the root, and no doubt it is very helpful.

The loose pin crown teeth for sale by the dealers are too many to name in detail. With my limited experience and knowledge about crowns, I am led to believe a crown with a baked pin is much stronger, especially for the six anterior teeth. It so often happens that a crown needs to be ground lingually, that these loose pin crowns become frail, especially the kinds with a large dowel hole, and as cement does not adhere very tenaciously to a glazed porcelain surface, the crown is apt to break or pull away from the pin. The loose pin crown with a pin that accurately fits the dowel hole, such as the Brewster, ought to give good service if well mounted. We cannot call a Richmond crown a porcelain crown, because it has only a porcelain face. The porcelain crown which seems to be popular at present is the banded crown, which is constructed on the same principle of a Richmond.

It is not necessary to describe it, for no doubt everyone here has made this kind. It may be the ideal crown, but I believe if it were made to fit the root without a band it would be better. We may all think we can fit a band to the root of a tooth, but what does the other dentist think when he sees the crown a few years later?

When one examines extracted teeth with a view of seeing how well a band could be fitted to them, often one will be surprised to find how many roots of the anterior teeth taper from the enamel line to the apex. Bands fitted to such roots and driven up are certainly irritating and become insanitary; and it is a question if such an unnatural thing under the gum, although it fits well, is not irritating, to say the least. Why is the band necessary?

In preparing an inlay, one must consider the mechanical laws so that the filling will not be tilted out, but have a solid base.

In preparing a root for a crown one should consider the same laws. If a root is trimmed labially and lingually to a V shape, an impression taken, a platinum matrix swaged and burnished to fit the root and passed under the free margin of the gum and a post passed through the matrix into the root canal and soldered to the matrix, it is ready for a facing to be built up with porcelain in the usual manner. Such a crown I would suggest as the "ideal" one. There is no band to irritate. One can be certain of a perfect adaption to the root, which makes it stronger. There is room for more body of porcelain, so there is less danger of any chipping away. If the gum recedes there is no unsightly band showing; therefore, it will always look more natural. It will please your patient and also be less painful in preparing, which will make your patient more grateful.

It was very helpful and full of suggestions to see the clinic by Dr. Lester F. Bryant at Springfield last May, or in Rockford, at the Winnebago County Society, where he demonstrated that the restoring of broken roots with porcelain crowns was a very practicable thing. His method was to prepare the broken root as well as possible by cutting away the caries and ragged edges, etc., having an orange-wood stick that will pass into this broken root, and with warm gutta percha on the stick, an accurate impression is obtained, from which a cone-shaped matrix is made and swaged and burnished so it accurately fits the root. A post is passed through the matrix into the root canal and soldered; the crown is finished with a facing and porcelain in the usual way. It is surprising how many roots can be saved after this manner.

My descriptions have been short, because I believe you are all practitioners. I hope I have been understood, and that you can see some merits in a bandless crown.

NARCOTILE.

BY W. H. REABEN, D. D. S., M'COMB, MISS.

The tendency of the age is toward invention and discovery. Nothing is perfect, and hence does not give perfect results.

In dentistry some things have been discovered that have served the needs of the dentist, producing results, which have been long used, and are still employed.

Why do we use any of the vast number of methods, materials, agents, or drugs? Is it because they are perfectly satisfactory in their results? Not always, but because it is the best we can do—not that we are satisfied.

However, we wish nothing better than, say gold or porcelain as filling materials; forceps and elevators as extracting instruments, and the dental engine and its numerous accessories. As local anesthetics, cocaine, eucain, etc., but as a general anesthetic, nitrous oxide, which, as given with the old style inhaler, was far from satisfactory in its results in too many cases.

With the improved nasal inhaler nitrous oxide has become a far more satisfactory and reliable anesthetic, the available time for operating running as long as half an hour. But there is still an objection, that we frequently have patients who cannot be "downed" with gas, and this class is almost invariably disagreeable to handle, sometimes fighting, screaming, or sliding out of the chair.

There is also the great waste and consequent expense of the improved method, a constant stream of gas passing into the nose to be inhaled.

And lastly, as an objection, may be mentioned the bulkiness of the apparatus, and the frequent objection of patients to the present form of inhaler, though this can be overcome in some instances by using old style face-piece until unconsciousness supervenes, then applying the nasal inhaler, thereby prolonging the time for operating.

We now come to the consideration of narcotile, the one general anesthetic *par excellence.* When you get used to it and acquire confidence in yourself, you will proceed with its administration with as little uneasiness as when removing a tooth, or putting in a filling. I feel much less nervous when giving narcotile than when injecting a local anesthetic, though I have been using a safe preparation of cocaine for several years.

I have administered narcotile some two hundred times with almost invariable success, and by success, I mean that the anesthesia was perfect—that is, profound enough in 90 per cent of the cases.

"What about that 10 per cent?" you may ask. Well, a few woke up before I was through with them; there was no serious disadvantage in that, however, because one is in a state of analgesia, for quite a time before regaining complete consciousness, during which time I can operate with very little pain to my patients, as they afterward admit.

In three or four cases patients manifested symptoms of distress after taking a few breaths at the inhaler, and attempted to slide out of the chair. In some of these cases I forced the anesthetic, but in others I did not consider it worth while, the patients being negroes, which latter are the worst patients we have for general anesthesia. They almost invariably give trouble, becoming frightened at just about the time the anesthetic is taking effect.

I often have trouble with children, in making them take the inhalation, but call to my help relatives or friends, who are usually present. Children are always afraid of the inhaler, and the usual mild coaxing is of no avail. I have adopted the plan lately, with highly satisfactory results, of spraying a piece of cotton with the anesthetic, and applying same to nose. The anelgesia produced is very gratifying.

There has never been a death from narcotile, so far as I know.

Narcotile is not plain ethyl-chloride, as some seem to think, but a chemical compound, a bi-chloride of methyl-ethyl-ene.

Somnoform is pushed upon the market, is advertised, and written about in the magazines, while little or nothing is said of narcotile. From what I have seen of somnoform, it is inferior to narcotile in point of agreeableness to patient, duration of anesthesia, scientific method of inhalation, and, most important, its analgesic power, which I have never seen demonstrated with somnoform.

PROCEEDINGS OF SOCIETIES.

THE CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held October 16, 1906, with the president, Dr. Hart J. Goslee, in the chair.

Dr. Truman W. Brophy read a paper entitled "The Origin and Surgical Treatment of Ranula."

DISCUSSION.

Dr. Thomas L. Gilmer:

I have had no opportunity to know what was in Dr. Brophy's paper, and as I have been out of the city and did not expect to return in time for the meeting, did not prepare to discuss the subject.

The subject is an interesting one, and the paper describes a diseased condition, which we are liable to see in our practice, and, though a dentist may not feel that he cares to operate for the cure of ranula, yet he should desire to be able to make accurate diagnosis, when he may refer such patients to a competent surgeon.

From my reading, and also from what was said in the paper, I judge that there is an indefinite idea as to what ranula really is. Some authors define ranula as an obstruction in the salivary ducts causing an accumulation of saliva back of the obstruction. Others say that this is not true ranula; that true ranula is a retention cyst or a cyst filled with mucus from some of the mucous glands in the floor of the mouth, or from Nuhn and Blandin glands of the tongue. Which is ranula, and which is not, I will leave you to decide. If it is true that both conditions are characterized by an appearance resembling the belly of a frog, which gives rise to its name, then one name might cover both. However, the pathology is very different and there should be a name specific of each disease. I have seen cases in which the salivary ducts contained large stones, especially Wharton's duct, in which there was no ranula or accumulation of saliva, the patient had no distension of the submaxillary glands on eating or any other time. In looking back over my experience I fail to remember a single instance in which the plugging, so to speak, of the salivary ducts with a stone has caused a distension of the duct by accumulation of saliva a ranula.

Knowing that Dr. Brophy was to read a paper on this subject, I thought you might be interested to see a couple of stones I removed, in both instances from Wharton's duct. In neither of these cases was there inconvenience from accumulation of the salivary fluid, the saliva passing between the wall and the stone. The larger of these two stones gave rise to no inflammation of the duct, and, as before said, did not produce ranula. Although it caused no inconvenience, it was removed for fear it would do so at some time. In the other case the stone caused inflammation of Wharton's duct, which extended back to the submaxillary gland, and at times gave rise to a great deal of pain and fever. The cause of the swelling and inflammation of the gland was not discovered until I introduced a sound into the duct and by this means detected this stone. Such a case should not be considered a ranula.

If you will allow me to digress a little, I would like to speak of another condition which seems to have been epidemic in my practice at times, namely, an interstitial inflammation of Wharton's duct, in which, as a result, there had occurred stenosis with narrowing of the lumen of the entire duct, the gland participating in the inflammation. This condition lasted for an indefinite time, but eventually subsiding. Another condition I once found which had been taken for ranula by another practitioner, and which I supposed was a mucous cyst in the floor of the mouth, turned out to be a pocket containing a large amount of very bad-smelling semi-fluid material. It appeared to be a mixture of inspissated mucus and pus. I had microscopic examination made of the material and found that it contained large numbers of tubercle bacilli. Further examination of the diseased area discovered that the left sublingual salivary gland had been practically destroyed by tubercular infection. I call your attention to these observations, in order that you may better differentiate between unexpected conditions and true ranula.

Dr. C. E. Bentley:

This is a subject that should interest all of us, because it is quite evident that we are at sea as to what ranula really is. Scientific literature gives to ranula no distinct place. This being true, it seems that those of us who are interested in this topic can find here an unexplored field into which we may go and try and follow it to its terminus, and furnish such data as is necessary to give it a place in literature. That is one of the reasons why this subject should interest us.

It has been truly said by Dr. Gilmer that it is doubtful as to what ranula really is, and the paper has indicated in a cursory way that ranula is a name given to a disease in which there is practically obstruction of the ducts by salivary calculi. All tumors of the mouth are not ranulæ, because there are various tumors of the mouth that simulate ranula and are not ranulæ. So far as I can learn, ranula is a retained cyst within the body of a salivary duct. The disease may emanate from a gland, or it may be a pathologic expression from a diseased condition along the route of the duct. The paper, as I understand it, stated that these conditions were made manifest at the orifices. I am inclined to take issue with the essayist in regard to that, because these pathologic manifestations may have their expression along the tract of the duct or within the substance of the gland itself, while the orifice may be in a normal condition. That was my understanding of the statement made in the paper. I may be wrong. If so, I will be glad to have the essayist correct me. But so far as my experience goes, we may have these expressions within the duct itself, along the tract of the duct, or within the substance of the gland. That brings me to the point concerning the rarity of this disease, and possibly that accounts for our ignorance of it. I have been told by a gentleman who is well versed in current medical literature, and particularly with the literature of this subject, that the elder Gross only had two cases of ranula in his extensive surgical practice. If that be true, it makes the disease all the more rare, because that man dealt with all phases of surgery. I have no right to set myself up as an authority on this subject; but I have had two cases of ranula, one of which was a very obscure and complicated case, with which I was unable to deal, for the reason that the patient left me before I could bring the case to a termination. The other case was very interesting, and before I get through I am going to show you an X-ray of it. I would like to say also that there are three of these glands that are affected; one is Steno's duct, the other is Wharton's duct, and the other is Ravini's duct. Wharton's duct seems to be more frequently attacked with ranula than any of the others. Steno's duct is rarely affected with ranula, but nevertheless it may be involved. There are causes for some of these ranulæ. For instance, operations upon the tongue, or amputation of the tongue, can so mutilate the duct of Wharton or the duct of Ravini as to cause subsequently a ranula. Then, there may be by traumatism an abrasion of the mucous membrane, and it can cause ranula. A cicatrix from either of these can cause ranula. Calcareous deposits may also cause ranula. There are notable or marked differentiating signs between the duct of Ravini and the duct of Wharton. Wharton's duct, when obstructed, will elevate the tongue on the side on which there is an affection, and lift it, and there is this frog-belly-like swelling that has been described by the essayist. But it is upward, whereas Ravini's duct or the sublingual gland is downward, and I have had the rare pleasure of seeing one of Ravini's ducts where there was a swelling right underneath the chin without any corresponding swelling in the mouth. So far as I can understand, these two distinguishing features, these swellings, characterize the difference between an affection of the duct of Ravini and the duct of Wharton.

The operative treatment of this condition is also a matter for concern. Some authorities claim that Ravini's duct, or the duct of the sublingual gland, can be better operated on from beneath the chin than inside of the mouth, for, as you know, there are some very important blood vessels in the floor of the mouth, or at least between the floor of the mouth and the outer integument of the chin. For instance, one may strike the lingual artery, and the case may terminate fatally. The tongue is a very vascular organ and some injury might be done to it, so it is recommended that in cases in which Ravini's duct is involved that the operation be made from under the chin or from without the mouth. On the other hand, where Wharton's duct is involved, the operation can be performed better within the mouth.

With reference to the stones that Dr. Gilman passed around, I should like to have him answer a question. If any of you have explored Wharton's duct through necessity, you must know what a thin threadlike duct it is. The walls of that duct are thinner than any tissue paper I have ever seen. It is so thin that one can hardly pass a needle-like explorer through it without more or less damage being done. Is it not possible that the large stone which Dr. Gilmer passed around ruptured the duct, and the stone lay within the confines of the integument itself? Is it possible for that thin, thread-like duct to dilate to such an extent without rupturing as to contain such a large stone? I ask that question.

With reference to the contents of these cysts, I want to say that one of their peculiarities is that when they are analyzed they are found to contain none of the ingredients of the saliva, and that is accounted for by those who have made such examinations by the fact that the ingredients of the saliva have disintegrated and possibly broken up into their elemental factors. I do not say that this is true, or that it is the cause of the tubercular germs found there, as referred to by Dr. Gilmer; but no person has yet found in these cysts any of the true ingredients of normal saliva, or saliva in its normal condition. And that is one of the peculiar things. For instance, ptyalin has never been found in a cyst of the ranula type.

With reference to my own case, I will say that I have had the pleasure of showing the deposits I got from it to several men who are present, and Dr. Gilmer saw this case with me. This stone is not as large as either of the stones passed about, and yet Dr. Gilmer and I sounded and explored this duct, and thought we ran against some roughened surface. However, after I had extracted the stone I found that it was without and not within the duct. The duct had ruptured, not at the orifice, but close to the entrance in the gland itself, and the stone lay deeply embedded in the tissues, as is shown in the skiagram that I pass around.

This patient had none of the disagreeable swellings that are characteristic of this disease; yet there was a suppurating surface and a very ugly-looking wound in that portion of the mouth which lies between the gum and frenum of the tongue, for that is where this duct has its territory. Frequent explorations did not convince either of us that we were striking a foreign substance. The stone was within a territory that should not be operated on carelessly, so the suggestion was made by Dr. Gilmer to pack this with gauze each day and get as much of the territory exposed as possible, which was done, and within two or three weeks, after continuing this sort of treatment, one day I was able to go down with a spoon excavator and remove this stone.

Dr. Frederick B. Moorhead:

Some two years ago I saw a case in the practice of an eminent surgeon in his public clinical work, having had the pleasure of examining the case before he saw it, and I thought it was ranula. This eminent surgeon examined the case and expatiated upon the fact that it was not ranula, and made the statement that an acute occlusion of the salivary gland by a calculus was not a true ranula. He referred to some authors which I had the pleasure subsequently of examining, and von Bergmann, probably the greatest surgical pathologist of his day, states specifically that a ranula is a cyst of the mucous gland just beneath the tongue. He mentioned the fact that some authors make reference to ranula, so-called, which involves the salivary gland. Mikulicz substantiates what von Bergmann says. Bland Sutton corroborates what the two other gentlemen said. These three constitute three of the greatest men of the day in surgical pathology.

Dr. J. B. Murphy had a case the other day which I saw. In this case there was an occlusion of the salivary duct by a piece of calculus, but which he said was not a typical ranula. It appears from what has been said, and from what some of the authors state, that there is a difference of opinion, but I think the best men take the position that a ranula is confined entirely to mucous cysts.

The pathological feature, as von Bergmann describes it, is essentially an infection which gives rise to an interstitial inflammation, followed by a growth of connective tissue which occludes the duct. The epithelial lining of the duct and gland becomes desquamated and free in the cavity, followed by a mucoid degeneration which is characteristic of glairy fluid seen in all cases of ranula. Von Bergmann states that the salivary gland in one instance may become a ranula; that is, by any occlusion, followed by an infection which gives rise to a connective tissue formation obliterating the duct, possibly subsequent to a calculus. The epithelial lining becomes desquamated and degenerated.

Dr. Bentley has said that saliva is never found in true ranula. Certainly not. One of the best authors says that ranula is not a salivary cyst, but of true mucous cyst origin. I have had no experience save in one case, and I would not even present that because it is not worthy of presentation. All I know about the subject is what I have read and seen in the practices of other men.

With reference to the treatment, surgeons of repute all take the position that the only procedure to be undertaken is the radical removal or total annihilation of the tissue; that any other procedure is a mere subterfuge, and a cure can only be effected by total extirpation. In very extensive cases, where the sac cannot be removed, a portion of the wall should be removed and the sac packed with iodoform gauze. Some recommend the use of the actual cautery. All aim, however, to obliterate the sac.

Dr. Otto Holinger:

Whenever I hear an abstract name, like the name of a man, or the name designating the appearance of a certain pathological condition, I feel that we are very apt to produce, first, a very poor diagnostician, and, secondly, an erroneous idea of the pathological condition involved.

Now, the word ranula comes from the Latin rana, meaning a frog, and cysts in the mouth that are termed ranula, are so-called because they look like the belly of a frog. The color of the frog's belly changes. It is supposed to be a peculiar bluish, grayish white color. But I think the simplest way to look upon all diseases is to recognize the condition itself. We have, for instance, closure of the salivary duct; plus dilatation of the duct, forming a cyst, which I think should be properly called a salivary cyst. Cysts formed by the closure of the mucous duct may be called mucous cysts. We have also dermoid cysts in the mouth. These dermoid cysts are very rare, of course, but they have been found. I do not remember any others, except there are cysts formed within tumors, such as large carcinomatous growths and fibroids. If one will examine the salivary gland, he will see that there are three positions where a cyst can be formed. First, at the entrance to the acini. These are the little places where saliva is formed, containing large cuboidal epithelial cells. Then there is the infundibulum, which is a tube or duct into which a number of acini open and form one of the lobules of the gland, and several infundibuli open into one common duct. Then we have the main duct itself. In the duct itself we may have a spasmodic cyst, so-called. I once had the opportunity of seeing a case of cyst which was produced by a large fibroid from the tongue, forming a sort of valve which pressed upon one of the sublingual ducts.

With reference to the contents of a salivary or mucous duct, I do not quite agree with Dr. Moorhead that the contents are due to a degeneration of the epithelial cells. Up to the time that the epithelium of the acini of the salivary gland is atrophied to the extent that its nuclei are decomposed, we have a true secretion of saliva; but on account of pressure we get gradual atrophy and finally a destruction of those cells with no more secretion of saliva, and then at that time we get absorption of the contents of the cyst and the cyst is obliterated. But ptyalin being an unorganized ferment, it breaks up easily and so is not found very long after it is secreted in the contents of such a cyst. The cyst contains degenerated epithelial cells, and also products of glands which are not yet evacuated, which is a true saliva. Mucus is secreted in mucous cysts, and finally the epithelial lining is destroyed, and if no inflammation, which means infection, is present, the cyst is absorbed. A mucous cyst may be absorbed readily, as in the case of a child I saw in which there was a cyst near the opening of the duct of the parotid gland. Dr. Dodson did not like to open into it, so finally, by massaging the swelling, it passed away.

With regard to opening into these cysts, or swellings in the mouth, it is rarely advisable to do much cutting, because of important structures within the mouth. Usually a small incision is made through the outer mucous membrane, the contents of the cyst evacuated by means of a blunt instrument, and the interior of the cyst is treated in different ways. Sometimes an attempt is made to destroy these cysts by means of acids or caustic, anything that produces a violent inflammation, will cause adhesion of the walls of the cyst, causing first destruction of the epithelial lining. Such agents as carbolic acid, pyrogallic acid, and even nitric acid in one case, which proved disastrous, have been used, but modern surgery advocates clean dissection of secreting membrane.

I recall the case of a little baby that once drank some caustic potash. He was brought to the hospital, and it was found that the mouth was burned so badly that scars formed afterward so that the duct closed from contraction of scars. In that case the entire submaxillary gland was removed because it was all enclosed within the tough scar.

Dr. Bentley asks about the formation of the large stone Dr. Gilmer exhibited.

I believe a small stone first plugged the duct; the wall of the duct ruptured, saliva, either escaping into the surrounding tissue, forming a diverticulum, when the saliva in diverticulum, becoming disintegrated, the lime salts were preciptated, perhaps about the original stone, which escaped into Diver, acted as a nucleus; or, second, the duct ruptured into the oral cavity, the roughened walls of the duct or the original stone acted as the agent producing the arresting of the calcium salts.

There are cases in which the wall of the duct hypertrophies as the duct dilates, but as no symptoms were present, I believe the first two reasons are most plausible.

Dr. Elliott R. Carpenter:

I am not competent to discuss Dr. Brophy's paper; yet I think it is the duty of every practitioner who has had a case of what seems to be a rare condition to report it, and I wish to report a case of so-called ranula. Whether it was a true ranula or not, I do not know. A young lady, aged 16, suffering more or less from pain for about ten days, was finally referred to me by her family physician. In referring the case to me he said, "I do not know whether this is a case of neuralgia or not, but it seems that it is." Upon examination I located tenderness in the floor of the mouth, and observed a peculiar condition, that was entirely new to me, of the sublingual gland on the left side. The pain was recurrent at intervals of about every two days. Upon exploring the duct with a small silver probe I discovered through the sense of feeling a stony condition. I am frank to admit that I did not know much about ranula at that time, and after watching the case for a few days and talking to some of my confreres about it, it was suggested to me that possibly the case was one of ranula. I cut at about the central third the top of the gland, having raised it from below with the aid of an assistant's thumb, putting cotton rolls on either side so that the gland might be grasped with the finger and thumb of the left hand, and with a ball burnisher relieved the adhesions or attachments that were present, but before I had finished going all around the incision the stone popped out. It was about the size of a full-grown date seed. There was no fetid odor, no pus, and with ordinary antiseptic treatment it took care of itself. This little operation was done some four years ago, since which time there has been no recurrence. There was no pain following the operation.

Dr. Thomas L. Gilmer:

With reference to the question asked by Dr. Bentley, will say that it is probable that when there are large stones in the ducts that there is distension of the wall. It may be, in some instances, that rupture takes place, but I doubt it, as there is no histological reason why the wall may not become distended, even if it is thin. It probably becomes thickened about the stone.

Dr. Brophy (closing the discussion):

My friend, Dr. Gilmer, said he was not prepared to discuss this subject. Mr. President and gentlemen, a master is always prepared to discuss a subject, particularly one with which he is constantly dealing. It is unnecessary for me to say that you have had abundant proof that my statement is correct.

Dr. Gilmer spoke of the appearance of this growth or development. It is immaterial what the morbid condition may be, in my opinion the word ranula is expressive enough to imply exactly the thought the author of that word desired to convey. He intended to convey the idea that there was a condition beneath the tongue which resembled the appearance of the belly of a frog. Somtimes an aneurysm situated beneath the tongue, covered over considerably with connective tissue, may have an appearance not unlike ranula; yet we have to associate with a name a certain condition, as we do, for instance, the word pyorrhea alveolaris, which does not mean anything except flowing of pus from alveoli. Pus flowing from alveoli is pyorrhea alveolaris. It may came from the alveoli of the lungs or of the kidneys, and, strictly speaking, one could speak of it as pyorrhea alveolaris—pyorrhea from the alveoli. So when we speak of ranula, we refer to a condition that is not normal, but which resembles something, and that something in this particular case is a condition in appearance very much like the belly of a frog. It does not imply anything definite in the way of a morbid condition, although we have associated with that name a condition which is due largely to an obstruction of the salivary duct, and sometimes to the formation of connective tissue within the mouth and at its floor, which in itself may exert pressure on the duct, obstructing it, and the trouble not having its origin in the duct. The disease or disturbance *per se* is not always of the ducts or glands, but pressure upon the ducts from without may arrest the flow of saliva.

Again accumulations of calcific matter within the ducts in considerable quantities will dilate them and frequently the glands themselves, producing a bluish appearance which resembles the belly of a frog, and therefore we call the condition ranula. If you will look at the photographs I have passed around, you will see that they illustrate two cases, in one of which there was obstruction of the duct which held the saliva in the glands. One of the gentlemen said that such a condition is not a ranula. If the condition did not resemble the belly of a frog, then I do not know what the belly of a frog looks like. Von Bergmann says that it is a phenomenon; ranula has that appearance of the belly of a frog. When in one of these cases a little pressure was made on the gland, which was distended to the extent of an inch and a half or two inches below the angle of the jaw, the gland emptied itself and the parts then assumed a normal appearance. What is the use of saying that this is not an obstruction of the gland, with excessive accumulation of saliva, or a viscid-like secretion which collects there during these obstructions? It certainly was, and when it was opened, its contents evacuated in the presence of the class, and the disfigurement of the patient was instantly removed. The material came out where the ducts were obstructed, and it was demonstrated by drying the floor of the mouth and excluding the saliva from the orifices of the normal duct. In that particular region on the left side of the mouth there was absolutely no moisture from the mouth. In the presence of the class I introduced a small silver tube, bent on itself, and at the end of a week or so the enlargement completely disappeared. In the second case the duct was obstructed by the pressure of the connective tissue in the floor of the mouth. I felt that I was going to relieve the patient by inserting this tube, but it did not cure her, so it became necessary to remove all tissue in the floor of the mouth down to the integument itself, including the duct and everything beneath.

One gentleman spoke of making external incisions beneath the chin in this operation. Such a procedure is not called for. With a knowledge of the anatomy of the parts, and necessary instruments, one can control hemorrhage in a case of that character and by operating within the mouth prevent unsightly disfigurement. So the two cases are not alike. Pressure on the nerve trunk may sometimes cause neuralgia. In one of my cases here illustrated the gland was affected by pressure due to the formation of connective tissue outside of the gland.

I have seen deposits of salivary calculus on the lingual surface of lower incisor teeth produce obstruction of the duct by causing inflammation and adhesion of the orifices of the ducts.

There may be, as Dr. Gilmer has related, degeneration of the gland. We may have a calcific deposit in the gland which will cause degeneration of the gland itself without ranula. I did not speak of that, although it is very closely conneceted with our subject, and it is quite natural to discuss it along with ranula. Such a disease of the gland may not be ranula. A disease of the duct with swelling may not be ranula. But the gland itself may be degenerated, filled with minute granules of calcific matter, which may call for the removal of the gland. I believe removal is the only procedure which will effect a cure of such a condition.

Dr. Bentley did not understand clearly what I said with reference to the orifices of the duct. I stated that ranula was due to obstruction of the duct and of the submaxillary and sublingual and salivary glands. I did not say that it was an obstruction of the orifices only. I spoke later about the orifice or orifices being closed. Anything which will arrest the flow of saliva and cause the outline and bluish appearance of a condition resembling the belly of a frog is ranula. I am hardly able to conceive how an obstruction of Steno's duct can produce a ranula. Still it might in some cases, but I have never seen one, nor have I ever heard of an obstruction of this duct being referred to as resembling a ranula.

The specimens exhibited by Dr. Gilmer are interesting and instructive. The case related by Dr. Carpenter is likewise interesting. I failed to bring along two specimens which I have.

I do not consider a total extirpation of the tissues, as recommended by Dr. Moorhead, called for. If I had in one of these cases proceeded to extirpate the tissues which were involved, to relieve the pressure upon the surrounding parts, which caused an induration of all the tissues of the mouth and chin, I believe I would have done wrong. It was not necessary in my judgment to do anything more than I did, and the patient today is perfectly well. This was several years ago. I opened the duct, put in a tube, evacuated the saliva.

It was impossible for the patient to speak plainly on account of her tongue having been lifted to the opposite side of the mouth. She talked with extreme difficulty. However, after the cyst was evacuated, her power of speech returned to normal.

I was glad that Dr. Holinger spoke this evening, and I will say that his statements with regard to the formation of cysts and their manner of formation are based upon true, sound pathological grounds.

Dr. Moorhead's statement in regard to pressure or force applied to the gland is also correct; that connective tissue develops in the floor of the mouth and may resemble the belly of a frog. If it does, the condition may be correctly termed ranula.

Dr. Holinger spoke of making an incision. You do not need much cutting if there is only a retention of fluids. If there is a growth, as in the case of one of the patients whose case was reported by me, of course there is no other recourse than to remove it.

In the absence of Dr. Arthur D. Black, who was called away, Dr. Thomas L. Gilmer read the report of a case of fracture of the jaw for Dr. Black. (See paper, p. 184.)

COMPOUND FRACTURE OF THE JAW.

Dr. C. E. Bentley:

The case that I am about to describe is similar to the one reported by Dr. Gilmer for Dr. Black.

This gentleman (exhibiting patient) met with some external violence from the fist of a policeman or a club one evening at the stockyards, and was brought to the hospital in a comatose condition. Upon examination a fracture anterior to the angle of the jaw was found, and just on the other side of the median line or symphysis. There was practically no swelling because I was called to the hospital early in the case. I wired the parts together, wiring the fracture of the upper jaw to the lower. I do not know to whom I am indebted for this method, but I think it is to Dr. Gilmer. It is a simple method, and if so, I wish to extend to him my personal thanks at this time for this particularly favorable method. This young man was in the hospital about three weeks, at the end of which time there developed a very ugly necrosis anterior to the angle of the jaw. There was an infection. It was a case of compound fracture anterior to the angle of the jaw. Fortunately, I did not have to make an external incision. This portion of the jaw (indicating) was fractured in its entirety from the border up, and by constant irrigation on the part of the hospital nurses we were able to neutralize the infection that had occurred. After the pus ceased to flow, we took the wires off of the upper jaw, and reduced the fracture of the lower jaw by wiring, which caused him the use of the jaw as much as possible, with the result that I will be be very glad to show you. (Patient was exhibited and examined by the members.)

THE AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT BERLIN, GERMANY, AUGUST, 1906.

DISCUSSION OF DR. SOLBRIG'S PAPER, "SOME CONSIDERATIONS OF THE CAUSES OF ABNORMALITIES OF THIRD MOLARS."

Dr. H. W. C. Bödecker

Thanked the author for his very interesting paper. Everyone knew the trouble met with in the lower third molars, especially when there was not sufficient room. In comparatively healthy subjects, as most of them fortunately were, the third molars gave comparatively little trouble, but sometimes, especially in anæmic subjects and those with circulatory disturbances, there was a great deal of trouble with the eruption of these teeth. With regard to development, the cause of malformations and maldirections was probably due to the germ being formed in the third year after birth. From that time onward the system was subject to a great many pathological changes, and all such changes, particularly honey-comb teeth, were brought about by bad conditions of the system, especially eruptive conditions of the skin. With reference to the bad effects produced by third molars, the author had enumerated a great many of them that everybody had seen, but there was another trouble very often caused, namely the ruin of the whole lower set of teeth when the third molars came in an arch that was in a crowded condition. It was well known that the pericementum was a wonderfully constructed little membrane, which not only served as a cushion, but its fibres were suspended in such a wonderful manner that the teeth under the pressure of articulation were able to move up and down elastically, the fibres of the pericementum having an elasticity which saved jarring from the bite. When a tooth was extracted out of a crowded arch and examined closely, the anterior, posterior, mesial and distal surfaces of the crown of such a tooth would be seen to be very beautifully polished, but in older persons the enamel was worn away altogether and the dentine was exposed. That would lead to the ruin of the teeth in most instances except they were very highly organized. Highly organized teeth would stand anything, even if the dentine was exposed, but in teeth of a low organization decay would very soon set in, especially in those mouths that were not kept perfectly clean, which in a mouth with a crowded arch was sometimes a matter of impossibility.

Prof. W. D. Miller

Said the Society was very much indebted to Dr. Solbrig for his instructive and interesting presentation. Dr. Solbrig dismisssed altogether the theory of evolution as accounting for the lack of development of the third molar, but he should not like to go quite as far as that and say that evolution had no effect at all. It was known that every organ of the human body which became useless had a tendency in the course of time to retrograde and finally to disappear altogether, not in a few days or a few years, or a few generations, but in the course of thousands of years; and if in consequence of modern civilization and the present method of preparing food, and so forth, the third molars became useless, he thought it would be found in the course of thousands of years that these teeth were bound to degenerate. The fact that the upper third molar was found wanting more frequently than the lower might be possibly accounted for by the fact that it had only half an antagonist and sometimes did not antagonize with the lower molar at all. He recognized the fact that there was an inability to account for the lack or disappearance of the upper third molar on that theory alone, but he thought it was a factor that should not be excluded. There was another thing to which he desired to direct Dr. Solbrig's attention. In cases where the third molars were wanting it might be interesting to find out whether from any cause there had been possibly an arrest in the development of the individual himself. Men continued growing to different ages; one might grow until he was twenty-five, while another stopped growing at sixteen or eighteen. Sometimes there were certain external influences which tended to determine the age at which growth ceased. Tom Thumb was brought over to Europe on exhibition and it is said that as soon as he reached this side of the Atlantic he began to grow and they had to take him back to America again. It was quite possible that whenever the body ceases to develop the growth of the teeth might also be arrested to a certain degree. Dwarfs, as far as his experience went, never had a complete, permanent denture. Usually the first molars and the incisors were present and occasionally the biscupids might be seen. There was always a very marked retardation in the eruption of the permanent teeth and he had seldom seen a dwarf with the second and never one with the third molars. It might be that the same factor was in operation to a certain extent in persons of fairly normal development, but it was not always possible to trace it. In a living person it would not be possible to find out all the influences that had stopped his development at a certain age. In all cases where the tooth was wanting Röntgen photographs might be taken to see whether the teeth were retained, and in many cases he thought it would be found that this was the case. It would be interesting also to find what stage of development they were in. The fact that the third molars developed later than the other teeth would not be a sufficient cause to account for the disappearance, because it was found that faults in development occurred in teeth which developed early. For instance, hypoplasia of the enamel was very common in the first molars, which began to calcify in the twenty-fifth week of fœtal life, and in the front teeth, which began to calcify in the first year after birth, but it was seldom seen in the second and third molars which developed later. Any agency which acted upon a tooth while it was still in the jaw, any disease or disturbed nutrition, did not act so much upon the teeth which developed late in life as upon the teeth which developed early in life. With regard to the photographs showing mutilation of the teeth, that was a thing to which the dental surgeon must direct attention. Very often reports were seen in connection with discussions on erosion where it was said that erosion had been seen in a case where a tooth brush had never been used. It was necessary to exclude the possibility of that case being one of deformation. Very often uncivilized people filed wedge-shape marks in the necks of their teeth and it was very difficult to distinguish those marks from erosion. With regard to the hereditary nature of deformities, Dr. Solbrig had referred to the feet of the Chinese, but that was an artificial deformity just as circumcision was, and artificial deformities were never hereditary. But deformities born with a child were in a certain degree hereditary. If a man was a hunchback there was the danger that if not his child, perhaps his grandchild or great-grandchild would be a hunchback, and if a man was born with a cleft palate, there was a decided possibility that some of his descendants might be similarly afflicted. That was another factor which must not be excluded altogether. He was so much pleased with Dr. Solbrig's paper that he had asked him for a set of slides for which he was willing to give him a set of his own in exchange.

Dr. E. A. Bogue:

Was greatly interested in the paper for several reasons. Dr. Miller had brought forward the subject of arrested development, a subject which agreed very accurately with suppositions as to food. It was usual and almost universal to extract third molars, although some people had been in the habit of keeping them in. Dr. Davenport had told him three days previously of a remarkably good scheme, which was to pack gutta percha between the erupting third molar and the second molar, and leave it there. He had himself been in the habit of wedging, and had models of quite a number of cases of impacted third molars that he had brought into position. The result was an enlargement and a partial rectification of the dental arch, the influence of which was very good.

DISCUSSION OF DR. BLACK'S PAPER, "STUDIES OF THE BEGINNINGS OF CARIES IN ENAMEL, WITH REFERENCE TO FILLING TEETH."

Dr. W. D. Miller:

Said that Dr. Black had very kindly given him his paper to look over, from which fact he understood that Dr. Black desired him to open the discussion. Dr. Black and himself had been working pretty much along the same lines for nearly twenty-five years; their lines had deviated a little now and then, but as a rule they had kept fairly parallel. Sometimes Dr. Black had climbed over a hill, while he himself had gone round it, but they had been always so close together that they were within speaking distance. Sometimes their interpretations of different appearances had not quite agreed, but that did not alter their friendship. It had been an inspiration to them to work harder. He had been very pleased indeed to hear Dr. Black's presentation of the subject of extension for prevention, because much had been heard of it through the dental journals, and some might have had an incorrect idea of what he meant. He had often asked himself, "How does extension for prevention differ from the method of contour-filling given to us thirty years ago by that wonderful operator, M. H. Webb, and his pupils?" Webb said, cut away so much from the proximal surfaces that when you have inserted and finished your fillings the enamel margins will be outside of the center of infection. Only gold will then lie within the center of infection, and as gold cannot decay there can be no return of caries. This was theoretically perfectly right teaching, but to follow it out in all cases required often an unnecessary sacrifice of tooth tissue and a degree of skill on the part of the practitioner and of endurance on his part, as well as on the part of the patient, that was not always present, to say nothing of the fact that the results were often disappointing. Dr. Black says: "Extend as much as is necessary under the circumstances and as much as your experience shows you is necessary to prevent a recurrence of the decay." He thought no one could find any serious objection to what Dr. Black had said on the subject of extension for prevention; it was perfectly rational, and those who had the necessary experience and skill and patience to follow out his line of work would undoubtedly accomplish better results in daily practice. There was one point Dr. Black did not emphasize as much as he might have done—that of shaping the cavity so that it was possible to approach all parts and margins and be able to condense the gold on all parts. Over and over again he had seen caries reappearing at that part of the cavity which was most inaccessible. Very often he had seen caries with small proximal fillings of the front teeth occurring on the labial margin and not on the lingual margin, for the reason that in filling a small cavity it was possible to condense the gold better against the lingual than against the labial surface unless the cutting away of the labial wall had been done very freely. He had for the same reason frequently found recurrent caries toward the cutting edge of the teeth, while the cervical border was perfectly healthy. Dr. Black had brought forward many interesting questions relating to caries of the teeth. In the first place he had said there was nothing residing in the tooth itself, apart from fissures and pits, which made one tooth more susceptible to caries than another. That was a point upon which he might not quite agree with Dr. Black. His own experiments had shown him that dentine from the teeth of different kinds of animals showed great differences in its susceptibility to decalcification by acids. Dentine from the tusk of an elephant had a specific gravity of 1.6 and contained 61 per cent of lime salts; that from the tooth of a sperm whale had a specific gravity of 2 and 71 per cent of lime salts. Subjecting a section 1 millimeter in thickness to the action of fermenting liquids, it would take about five times as long to decalcify the dentine from the tooth of the sperm whale as it would to decalcify that from the tusk of the elephant. Dentine from tusk of a walrus would give results which lay between the two. There was, of course, no such striking difference as that between the dentine of different human teeth, but he had found between the dentine of teeth of immunes and of highly susceptibles a considerable difference. He had also found a considerable difference between healthy enamel and poor enamel. Differences were also found in the susceptibility of enamel in one and the same tooth on different surfaces. He had found repeatedly that the enamel on the lingual surface of an upper central incisor was much more susceptible to the action of acid than the enamel on the labial surface, and if the lingual surfaces of incisors were not kept constantly clean by the action of the tongue they would be much more subject to caries than they actually are. As he had said at St. Louis, former views regarding the effect of the density of the teeth were exaggerated. If one tooth was hard and another soft, that did not account for one tooth being immune and the other susceptible, but it was one of the factors. He was of opinion that there were many factors which would account for immunity in one case and susceptibility in another. The perfect chemical constitution of the teeth, the solidity and the chemical combination between the lime salts and the organic matter of the teeth might make one tooth to a certain extent more resistant to the action of acid than another tooth, and that was the conclusion he had come to from his experiments, and he believed it to be one of the factors which contributed to making a tooth immune or susceptible.

With regards to periods of immunity and susceptibility, it was a subject of great interest. He had himself had his period of susceptibility in a high degree and his period of immunity and he was now in his period of susceptibility again. When he became older he might have a period of senile decay, but he hoped to avoid it. He was a country boy until his thirteenth year, and was not able to say whether he used a tooth brush or not, and he could not recall having paid much attention to his teeth while he was at the university. When at the age of twenty-two he came to Berlin, Dr. Abbott found something like eighteen or twenty bad cavities in his teeth which he filled perfectly. Those cavities were all centers of infection of the first order, and it might be useful to discriminate between centers of the first order and centers of the second order. All the bad centers had been filled; all the centers of retention which remained were of the second order; i. e., those in which food only lodged occasionally and in small portions, or those which were washed by saliva, or cleared by the action of the tongue or cheeks and kept *comparatively* free from accumulations of food. In those caries went on very slowly. After all of the retention centers of the first order had been filled there followed a period of nearly twenty years in which he said to himself that his teeth were immune. As a matter of fact they were not, for at the same time caries was going on slowly and presently cavities of primary as well as of recurrent caries began to appear at points where food occasionally remained lodging. In 1897 he was obliged again to begin to have his teeth filled and from time to time he had a dental operation performed. Such was the explanation of the susceptibility and of the apparent immunity and the recurring susceptibility in his own case. He was not aware that there had been any change in his diathetic condition. Coming to senile caries, he had observed a number of illustrative cases. One of the last patients he worked for was one whom he had known for nearly twenty-five years. That patient had fairly good teeth; now and then a filling had to be made, but there was nothing particularly noticeable until he reached the age of about seventy. Then, partly as the result of severe illness, the care of the teeth was neglected, his gums receded, his teeth began to get loose. Great masses of food were found between the necks of the teeth, imparting a sour smell to the breath and showing a marked acid reaction. Nearly every single tooth began to decay on the proximal surface and in a few years great holes were found. That was the explanation of senile caries in this case. He did not deny there were other causes for the varying immunity and susceptibility. He believed that the condition of the health of the patient might not only alter the reaction of his secretions, but possibly make them more favorable to the development of different kind of bacteria. The reaction of the saliva was another debatable question and one on which opinions were divided. There were authorities on dental pathology who said there was little caries in cases of acid reaction because bacteria did not grow in acid media. Others of equal authority said that in cases of immunity there was an alkaline reaction. The most thorough series of experiments and analyses ever made were reported recently by Dr. Röse in Dresden. He analyzed the saliva in hundreds of different patients, employing two skilled chemists working for over two years, and he had come to the conclusion that the relative immunity was in direct proportion to the alkalinity of the saliva, just opposite to that which is held by other investigators. He himself was of opinion that under ordinary circumstances it did not matter whether the saliva was neutral, slightly alkaline or slightly acid as far as caries was concerned. He had made a long series of experiments outside the mouth by which he showed that whether one started out with an alkaline mixture of foodstuffs with saliva, or with an acid mixture, within one or two hours both those mixtures would have the same reaction. It must be the same in the mouth; there could not be caries without an acid reaction, and if the saliva was alkaline in the beginning the bacteria must first make it acid. The bacteria in the mouth were to a certain extent bacteria which could stand the action of acid and develop in acid. He believed the best explanation for the conflicting views was found in the position that as long as the reaction was not very pronounced it did not matter much whether it was slightly alkaline or slightly acid. On the other hand, he believed that when there was a *strong* acid reaction it was detrimental to the teeth and might bring about a certain kind of acute caries. Not long ago a boy of 12, one of the class of German people who never have any meat, living only on bread and potatoes and that sort of thing, came to him with saliva that was intensely acid. His front teeth had proximal caries and the enamel of the labial surface was white and chalky. The enamel of the upper bicuspids was almost completely destroyed, and nothing but a short lingual wall remained standing. He had seen a number of cases of that kind and he was convinced that an abnormally intense acid reaction of the saliva might be very detrimental to the teeth and bring about a kind of acute caries which to a certain extent could be differentiated from ordinary caries, but which, after all, must be considered as caries. On the other hand, intense alkaline reaction of the saliva retarded caries, as could be seen in the animal kingdom, the horse and dog having a saliva so intensely alkaline that when mixed with carbohydrate it took twenty-four hours to produce enough acid to neutralize the alkali. With regard to sulpho-cyanides in the saliva. he was one of the men that rushed to the laboratory when Dr. Michel of Würzburg came out with the idea that sulpho-cyanides in the saliva were accountable for immunity to caries. Dr. Michel examined a small number of cases which seemed to bear out that theory and affirmed that sulpho-cyanide of potassium was an antiseptic preventing the development of bacteria. It was found out in the laboratory that such was not the case, that bacteria developed better in saliva which contained a certain amount of sulpho-cyanide of potassium. Dr. Low was a little as variance with Michaels of Paris regarding the action of sulpho-cyanide. Dr. Low said that when there was a large quantity of sulpho-cyanide there was immunity, while Michaels said rather the opposite. Verbally: "There is immunity wherever the sulpho-cyanides are *not superior* to the total alkalinity." Certainly the sulpho-cyanides did not act as an antiseptic. They might be an indication of some general diathetic condition of the human body which might tend to render a person susceptible or immune. His own observations, however, did not quite support this view. He had found a number of cases of immunity with only a trace of sulpho-cyanide. Some time ago he examined a negro who had not a trace of caries in his mouth; at one time he discovered sulpho-cyanide to the extent of .004, at another time only a trace. He had examined two Chinamen, both immune, without a trace of caries, and they had saliva so stringy that it could be pulled out into strings like the white of egg; they had no sulpho-cyanide beyond a mere trace. He had seen persons whose sulpho-cyanide was so strong that the moment chloride of iron was added a beautiful deep red color appeared and yet every tooth in the mouth was gone.

On the whole, in looking over the results which he had tabulated during the last two or three years he had found rather a preponderance toward the side of the coincidence of sulpho-cyanide with immunity, but not marked. Where he had ten cases of much sulpho-cyanide in conjunction with immunity he had had six or eight cases of much sulpho-cyanide in conjunction with a high degree of susceptibility. The difference was not sufficient to warrant drawing any conclusion. There was one experiment which Dr. Black had referred to which seemed very pertinent in connection with the question of immunity—the case of a mouth immune to caries where Dr. Black put a band around one of the teeth and thereby furnished a center of retention for food. He did not change the diathesis of the patient or alter the chemical constituent of the saliva or the presence or non-presence of plaques in the mouth, but simply furnished a point of retention for food. The result was caries. If that man had had natural centers of retention for food in other parts of his mouth he would have had caries there also. The fact that he did not have caries showed that he did not have the retention centers. That was what he had repeatedly found in immune patients. The teeth were usually well formed and kunckled well together and the gums were in a healthy condition and there were no centers of retention for food. That fact also must be taken into consideration in the discussion of the question of immunity to caries. Some years ago when Williams published the result of his experiments with regard to bacteritic plaques on the surface of the teeth it was stated that those plaques were the cause of caries and that caries must occur when the plaques were present and could not occur without plaques. He (Dr. Miller) could not quite agree with this view and in a paper published in the *Dental Cosmos* some four years ago he thought he had succeeded in establishing the fact that the plaques were not essential to the production of caries because plaques could always be found on all the surfaces of teeth which were not kept free by the friction of mastication. There were plaques in the teeth of animals that never suffered from caries, and he thought Dr. Black coincided with him in the opinion that these plaques were not responsible for caries. Yet he would not say they had no effect at all. Where there was a dense film of bacteria firmly adhering to the surface of the tooth they probably tended to increase the process of fermentation of whatever nature it might be. Dr. Black said that the plaques of Williams were not his plaques. He formerly thought that Dr. Black was of opinion that the films of Williams were a most essential factor in dental caries, but Dr. Black enlightened him on that point in St. Louis in showing that his gelatinous plaques were not identical with the plaques of Williams. He had not been able to find the plaque of Dr. Black because he had not looked sufficiently for it, but he had no doubt it was there, and Dr. Black had shown him in the laboratory how to hunt for it, and now he should pay particular attention to it. But he had to confess that he did not think there was any absolute necessity for the presence of such a plaque as Dr. Black had discovered in order to account for the phenomena which were present in dental caries. Taking a jaw with a row of teeth and moistening the teeth with a solution of lactic acid discs of liquid would be found adhering to the teeth just below the point where the teeth knuckled together. If that jaw was put in a place where it could be kept absolutely moist there would be always found a little disc adhering below the point where the teeth came together, and in a few days white spots would develop. The proximal surfaces of the teeth were so constituted that sometimes the point of contact was round, sometimes oblong; sometimes there were two or three points of contact, and sometimes a little cistern would be formed between the teeth, in which the decalcification might go on. In the preparations Dr. Black had shown, where there had been knuckling of the teeth, the decalcification had always begun just below the point at which the teeth came together. If there were irregularities and the surface of the tooth met at two points, leaving a space between, the caries would attack the tooth around the two points and then spread out so that the two points finally united together. He did not find any very great difficulty in accounting for the retention of the acid at a certain point of the tooth, because when food was retained between the teeth it might be shoved up into the point where the two teeth knuckled together and small particles of food would have a tendency to collect there. There was not a constant flow of saliva in the mouth and during the night especially there was no dilution of the acid which was formed, and in two or three hours the carbohydrates would ferment and there would be an acid acting on the teeth. He had had a plate made of caoutchouc into which he had inserted a natural tooth with a cavity opening freely to the mouth. If he put bread in that cavity and kept it in his mouth over night he found that bread to have a strong acid reaction in the morning. Where food could remain lodged there, there would be an acid reaction, with or without a plaque. Even when there was a flow of saliva it did not always wash out the particles of food between the teeth. After eating one might rinse the mouth as thoroughly as possible with a force that never took place under ordinary circumstances .and then if a thread was put between the teeth small particles of food might be removed, food which the liquid had never reached. He believed that the simple retention of food in connection with the surfaces of the teeth would suffice to decalcify a tooth whether there was a plaque there or not. He sometimes found that the plaque of Williams retarded the effect of the acid. He had taken teeth which had the plaque in abundance and removed the plaque in one portion and hung the teeth in a solution and found them attacked more vigorously in the part free from the plaque than the part that had the plaque because the plaque prevented the acid coming into contact with the surface of the tooth. At the same time he deferred to the great painstaking care of Dr. Black in all his experiments and acknowledged most heartily his humble thanks to Dr. Black for the work he had done. In course of time he hoped to be able to find the plaque and recognize it as one of the causes of dental caries. but he did not think it was a necessary cause. or perhaps a chief cause. because he was convinced there could be caries everywhere food lodged. According to Dr. Black's view of the action of the gelatinous plaque the acid had first to be carried by osmosis to the tooth and then by osmosis the lime salts had to be carried out, and it seemed that that might possibly retard the progress of caries. With regard to the conditions in mouths subject to caries or not subject to caries, he had taken the saliva of a man who was immune and mixed it with a solution of carbohydrates and taken the same amount from a person who was susceptible in a high degree and mixed that with the same amount of carbohydrate and put them both in the incubator. and he had found on an average that the saliva of a susceptible person would produce more acid than the saliva of a nonsusceptible person. Whether that was due to some constituent in the mouth or to certain bacteria it was impossible to say. It was very difficult to work on the subject because a great many bacteria in the mouth did not grow artificially. He believed in one thing a great mistake had been made. In former years he experimented with saliva mixed with breadstuff and carried on his experiments under the conditions occurring in the mouth. Goadby in particular took him to task for this, declaring that one must work with pure cultures. This he considered a mistake, because it was impossible to come to a satisfactory solution of what was going on in the mouth with pure cultures, as there were no pure cultures in the mouth. Some bacteria helped others to grow (symbiosis), bringing about certain conditions congenial to more rapid development, and two bacteria sometimes working together would produce more than twice as much acid as when each worked alone. That had been borne out by the experiments of Frohman in Berlin. A pure culture would not produce more than 0.75 per cent of lactic acid, whereas a mixture of saliva with bread, potato, and meat would produce a percentage of acid nearly three times as great. In a fissure on the surface of a molar, with undermining caries, if the contents were tested, there would be an acid reaction of a very surprising intensity. He had found that when his mixtures had been allowed to stand for a certain length of time a great amount of acid was formed and not only lactic acid. In his own cultures when they had stood for three or four days he almost invariably found acetic acid, and in fissures there might be other secondary products developing which might play a very active part in the process of decay.

He also considered the question of symbiosis and antagonismus one of great importance to which the attention of the dental pathologist should be directed.

In conclusion, Professor Miller exhibited a series of slides illustrating his remarks.

Dr. A. W. Harlan

Said that when Dr. Black showed the pictures on the screen, he exhibited some labial cavities and showed how he would treat them; he would like to know whether the filling of cavities like that would be of any more benefit to the patient if they were filled with porcelain inlays than if they were filled with gold. Dr. Black had stated that the points of susceptibility to caries were to be found on the surfaces of fillings and inlays and that they would extend beyond the cavity. The question was whether if they were perfectly fused, smoothed, unground inlays, the fact that the porcelain was a better non-conductor of thermal changes would make it more desirable to have such cavities filled with porcelain rather than gold. Dr. Black's paper was one of the most comprehensive in connection with the subject he had ever had the pleasure of listening to, and the points brought out with reference to areas of decay in enamel were exceedingly interesting and important. The absolute necessity for so many operations showed clearly the necessity of cutting away all the exposed surface of the beginning of decay on the enamel and filling, so that the fluids of the mouth would have a tendency to keep such surfaces clean. If that was thoroughly brought home to the minds of the profession they would perform better operations and save more teeth and cease to believe that the necessity for extension for prevention was a fad. It had been shown most conclusively from a scientific standpoint that there was a necessity for cutting away all the softened diseased enamel.

DR. BOGUE

Was pleased to hear Dr. Harlan's questions, because it seemed to him that Dr. Black had shown more clearly than had ever been done before the actual condition of things. One thing that had been most forcibly impressed upon him was that dentists as a body did not instruct their patients to keep the teeth clean. If there was one lesson more than another to be drawn from the paper it was that a clean tooth never decayed. Every patient that came to him he asked what his former operator had given him in the way of instructions in cleansing, and the answers had made him sick at heart, for it was but rarely that he found a person who could say that he had been really instructed. They had been told to be careful, but nothing was said of what they had to be careful about. Another thing Dr. Black had taught was the necessity for normal arches, of which the dentist did not see many. Not long since he received a letter from Dr. Anema in which he said that after searching the museums of London he had found one single case of normal articulation, and as Anema had been at work in Angle's School he ought to know what a normal articulation was. He differed with his friend, Dr. Black, a little with regard to normality. He himself looked upon normality as the completest work of Nature. If a watch was made to fulfil its functions down to half a second, it was a perfect piece of mechanism, and anything less perfect was not a normal watch. It was the same with regard to the teeth: normality was the thing to be aimed at. Dr. Godon had lately shown mathematically the lines upon which the normal teeth ought to articulate, and when teeth did occlude along those lines the corners of the teeth and the interspaces would be much more perfectly cleansed than under any other condition. Another thing Dr. Black had hinted at but had not brought out was this: If there existed in the natural baby strength and force enough to develop a perfect set of teeth, normally arranged, those teeth were very different from what they were in a weak civilized baby whose parents had been fed on wheat bread and oatmeal, and suchlike things, that did not take forty pounds of pressure to chew. If the baby was developed along the lines of normality it developed teeth that were normal. There was a very pronounced tuberosity between the occlusal ends and the neck of the teeth, and when those tuberosities came into contact they were like a row of marbles and food would not lodge. It seemed to him that those normal conditions should be borne in mind in order to approximate to normality in any work done in the mouth. With regard to the plaques mentioned by Dr. Black, Dr. Goadby had told him that he could produce the plaques at any time, and the difference between Dr. Black and Dr. Goadby was that Dr. Goadby thought the bacteria which produced decay were a product of the gelatinous mass whereas Dr. Black seemed to think the gelatinous mass protected the microbes which caused fermentation and produced decay. Which of the two views was true would no doubt be learnt later on, but they did not at all militate against the view with regard to saliva containing the necessary elements to produce the bacteria leading to decay, or militate against the view that clean teeth would not decay.

Dr. T. W. Brophy

Was sure he was expressing the feelings of everyone when he said that the American Dental Society of Europe had succeeded in accomplishing what had never before been accomplished, in bringing together two distinguished investigators upon a subject which appealed more to the dental profession than any other subject that could be named. It had to do with the preservation of human teeth and with promoting the very highest form of hygiene, because oral prophylaxis was the highest of all the departments of hygiene. When the subject of bacteriology became deep rooted in the minds of the medical profession and the question of infection was under consideration, it was found that the mouth was the greatest of all the centers of infection, and now the matter had been presented in such a graphic form that it had made an indelible impression upon the minds of the members of the Society. It was impressed upon them that to place the human family in the best condition to go through life it must be understood that oral prophylaxis was an essential feature. Much had been said in the press and on the platform throughout the world on the subject of the food question. He made a statement to a prominent official who had been industriously and earnestly working along modern lines that where one person had been injured through infection from poor food, thousands had been injured from auto-infection resulting from diseases of the teeth. It might be he was too enthusiastic along the line, but he was satisfied from his experience in the field of oral surgery that more harm was done by diseased teeth in lowering the vitality of people and bringing about diseases than from the neglect of any other part of the body. It was an old saying that teeth had no recuperative powers when once broken down, but were the hardest of tissues and should last through life. It had not been properly impressed upon the public that the loss of teeth was an irreparable loss, that it did not reside even in the skill of the prosthetic dentist to bring about a condition which could in any sense approach the perfection which existed in a normal denture. The hygiene of the mouth was an all important question, and what Professor Miller and Professor Black had done in presenting the subject would be welcomed, not only by the Society, but by the whole dental world. He felt it was worth a trip of ten or fifteen thousand miles to have had an opportunity of listening to the remarkable paper and the remarks made upon it by Dr. Miller in opening the discussion.

Dr. G. V. Black,

In reply, said that while Dr. Miller and he understood each other very well they differed on certain points, but thought nothing the less of each other on that account. Questions had been asked with regard to filling, furnishing a point of attachment, and with regard to the spreading of the conditions bringing decay beyond the margins of the filling. The idea of spreading or localization was just the point upon which Dr. Miller and he had some disagreement. They had no disagreement as to the localization, but only as to how the localization was brought about. If anyone took up the older works on bacteriology, those written before the idea of staining was developed, and of the cultivation in solid media, it would be found that the matter of zoöglia was a very important one in bacteriology, but in the processes of cultivation that had been in vogue for the last twenty years or more the zoöglia were never seen in artificial cultivation. There was no opportunity for it to form in cultivations of semi-solid material. In Dr. Miller's papers minutely describing the colonies of bacteria he said it was difficult to pick that particular bacterium up, as it would run before the instrument, and it was difficult to break it so as to get some of the bacteria for replanting. Nowadays broths were made from cold storage meats, from extracts, and so forth, and zoöglia forms of growth were never obtained in such products, and it would be necessary to go back to some of the fresh proportions before the zoöglia would be obtained in artificial cultivations. To him it seemed utterly impossible that the mere lodgments of food could localize the application of acid with the distinct accuracy which was observed. It required something else. While he could find plaques he could not direct the cultivation with any certainty; indeed it was very difficult to make two specimens of broth that would be just alike in the cultivation of bacteria. With regard to the question Dr. Harlan asked as to attachment, the nidus of decay was cleaned off and cut out, and a filling inserted, but the opportunity for the attachment was still there and it would grow and spread until it spread all over the margin, and then there would be decay at the margin although there was no sign of decay there when the filling was made. He remembered very distinctly the first time that was forced upon his mind. A gentleman came into his clinic whom he recognized as an old patient. He had a number of fillings, among which was one such as he had mentioned, and he had also proximal cavities. He was mortified to find that although these fillings had stood perfectly for thirty years there was a whitening at the margins on the side. The plaque had to be torn off the filling, but came away easily from the margins; it was a thin, yellowish substance of a waxy nature. It was not easily seen, but it would be full of vital organisms of a rather select variety. It was not a large mass of stuff that grew round the tooth composed of all kinds of micro-organisms. Most of the plaques seen on screens were not that kind of plaque at all and it required so much careful study to discriminate between the two that he did not care to show the plaques on the screen. The growth he had mentioned would not have occurred if the filling had been of a different form. The fact was that decay of the surface of the enamel began at a point and spread on the surface of the enamel or on the surface of a filling, not within the tissues at all. Accurate cleaning was of the utmost importance and if it was possible to keep the teeth clean there would be no decay. A young lady, a teacher in one of the schools, whose mouth he was caring for, came in one day and he looked over the mouth to see how well the teeth had been cleaned. The condition puzzled him and he asked whether she was left-handed and she said she was. In using her left hand she had escaped cleaning a portion of the teeth at a certain angle of the mouth. His idea was that the dentist should have the patients bring the tooth brush with them and give them a lesson in cleaning their teeth, correcting them of any faulty operation. Every time the patients came the dentist should see that they were pursuing a right method and correct their failures until there was a thorough cleansing.

Dr. Brophy:

Asked whether it was possible in the early development of the white surface on the enamel about the fillings, or even when fillings had not been inserted, to employ any means of polishing them away so as to have a reasonable certainty that they would not recur with proper care.

Dr. Black:

Replied that from the study of the beginnings of decay he should say that perhaps there was not more than 30 per cent of decays that ever got through the enamel. They would be found later in life as a dark spot. Something had happened to interfere with the process before the enamel had been penetrated, before the dentine had become infected. If the membrane had not been removed he would not remove it, he would keep the surface clean and not attempt to grind anything off, because if grinding was attempted it would only make matters worse; it was an acid formed on the surface of the tooth that did the mischief, not anything going on within the enamel or within the tooth, and if the conditions were such that the acid would not be formed upon the surface of the tooth no more decay would go on. All the dark spots seen on the surface of extracted teeth were the marks of decay that had been stopped. It was not always necessary to cut out every one of the dark spots. He himself had had contact points that had worn and were troubling him with the lodgment of food. There was a proximal filling in the one tooth and his son separated the teeth and found a dark spot on the second molar. A contact point from the filling was then built out by cutting a slot and laying in a piece of iridium wire, but in a few months something went wrong, and quite a little cavity was found in the dentine. Another question he wanted to bring out was the necessity for a closer study of one's physical powers. The dental student and practitioner should study his own physical inabilities. Many dentists had vision which was not as good as it should be, or their muscular ability was not great. There were strong men who with the pen grasp would fail to register a pressure of more than five pounds. He himself could register twenty-five pounds, and there were others who had registered thirty-five pounds. A man who knew his muscular capacity would know how to deal with his work. According to the muscular power of the operator a slot might be cut either with a chisel or with a bur. It was not only necessary to study dentistry, but to study physical powers of operating in dentistry.

On behalf of the Society the President thanked Dr. Black for his interesting communication.

THE MINNESOTA STATE DENTAL ASSOCIATION, JUNE, 1906.

DISCUSSION OF THE PAPER BY DR. D. D. SMITH, PHILADELPHIA, ON "SOME POINTS OF DIFFERENCE."

Dr. Alfred Owre:

I think it was Gustave Flaubert who said that music was the only art that lent itself to the proper expression of one's feelings; and that is the way I felt when I heard Dr. Smith speak about prophylaxis. It is well that an apprentice should know his place when he is in the presence of his masters, and I hope I recognize that: It is a singular coincidence that when I see and hear such men as Dr. Smith, I am forcibly reminded of other men who have strong convictions. For instance, when Count Tolstoy was traveling on the Continent some time ago he was very much interested in the leading institutions of these countries and he made it a point to study them rather than to visit the museums as other travelers do. While he was walking toward the Bastile in Paris one day he saw a cart coming along in which a man was being carried to the guillotine. He saw the execution, and then had the courage of his convictions to say that such things were wrong, although I think he was pretty nearly alone when he said that in the city of Paris. We owe a debt to those reformers, as I call them, even if they are wrong in forty-nine out of fifty-one per cent of their conclusions. I do not agree with Tolstoy in everything, but still I cannot help admiring him. There is something stimulating and invigorating in the efforts of these men to change the established conditions and so on. There are others that I might mention; such men, for instance, as Emile Zola, Henrik Ibsen, who has recently died, etc.

After reading Dr. Smith's first essays I was strongly convinced of the sincerity of his high idealism. He stands alone, but he has many ardent admirers in this country, or wherever dentistry is practiced. It is very interesting to hear these things from his own lips. He may be years ahead of his time, but those who have studied the scientific thermometer must admit that Dr. Smith is working along right lines. The deep thinkers of the medical profession admit that if they can bring their prophylaxis to such a degree of perfection as to eliminate disease they will have accomplished their highest mission. If we can follow out the same course in the practice of dentistry, we shall be the highest idealists of our time, and that is the *summum bonum* of life. The profession and the public alike must be educated before these higher ideals can be grasped and practiced. This is a hard matter to accomplish because of the apathy which exists in the world, but it is certain to come. It is difficult to break off from old habits. It is well to know that mere mechanics is not the highest attainment so far as dentistry is concerned.

In closing, let me say that there should be tremendous importance attached to prophylactic treatment.

Dr. Forrest H. Orton:

When Dr. Smith was describing his efforts to gain recognition through the dental journals, I was filled with sympathy for Dr. Smith and indignation at the dental journals. But after listening to the facetious manner with which he treated Dr. Eugene Talbot and his valuable work, my sympathy for Dr. Smith was changed to pity.

Dr. Talbot has devoted twenty years of untiring and unselfish labor in establishing an etiology for a disease which was before his work a mysterious condition to dentists and was treated in a purely empirical manner, and in most cases given up as hopeless, and, in my judgment, Dr. Talbot and Dr. Kirk are the only men who have attempted any scientific research work in this direction. The medical friends of Dr. Smith may have some excuse for considering the title of D. D. S. as a badge of partial culture, for, as I understand it, a knowledge of pathology is absolutely essential to successfully practice any branch of the healing art.

There is not the slightest doubt but that deposits upon the teeth are irritating to the gum tissue and that if they are allowed to remain and increase they encroach more and more upon the surrounding tissue and become a correspondingly greater irritation, but it is illogical to state that they are the only factor (as I understood the essayist to say). I believe he attributes all inflammation and suppurative conditions of the gums as well as all conditions leading to absorption of the alveolar process, no matter how deep-seated, to purely local accumulations on the teeth and that systemic conditions are never reflected in the gums. No one who has observed the oral symptoms of mercurial or other mineral poisoning or noted the condition of the gums during pregnancy, tuberculosis, scurvy, in fact, any condition producing auto-intoxication, can have any sympathy with Dr. Smith's statement.

I think the absorption of the alveolar process and the accompanying inflammatory changes due to malocclusion would be difficult to cure by keeping the accumulations from the teeth.

Dr. Smith is a strenuous advocate of keeping the teeth absolutely clean. I think if he can awaken the dental profession to see the importance of being more thorough in this respect he will have accomplished a great work.

DR. THOMAS. B. HARTZELL:

Dr. Smith has said so many things in his paper with which I thoroughly agree that it is with reluctance I rise to discuss it. I would like to say, however, for Dr. Smith's encouragement that he must not feel discouraged with the conditions in these "wild and woolly" parts, for we have been using creasote in teeth for many years, and I fully coincide with him in the statements he has made in regard to its usefulness, and I think he will be pleased to know that the benefit people receive from dental services are greater here than his apprehensive ideas would bear out. I also wish to say that right here in this little dental school, of which we feel we have some reason to be proud, the senior class of this year will bear testimony to the fact that they have been told, not once, but many times, that the man who devotes his whole attention to operative dentistry and neglects pathology, neglects to save or endeavor to save teeth that would certainly be lost from causes other than caries, is just one-half a dentist, and is not fulfilling the high calling to which he has been elected. I believe fully 50 per cent of teeth—the doctor says 60—are lost from causes other than caries. We certainly teach the neglected pathology that makes for the safety of the root.

I will, however, take issue with Dr. Smith in regard to the etiology he gives for pyorrhea, which I presume he bases on his clinical experience. I have been itching for the last hour or so—since I have been thinking about the talk of the morning—to ask Dr. Smith a question, and if I may pause in this discussion I will take the liberty to ask it now:

You mentioned in your paper that this inflammation of which you speak was the prime thing to be guarded against, and the idea I drew from the paper was that the etiological factor in all inflammations was of external origin; that we never need look for internal origin of inflammation that might occur in the peridental membrane or gum. I hope I am quoting you correctly, and I wish to ask if, in arriving at that conclusion, you have ever used the microscope to study the inflammation during its course and progress in the tissue? Have you used the microscope or was your experience entirely clinical?

DR. SMITH:

Clinical experience entirely. I did not make the assertion that it is always caused by irritation, but inflammation is often caused by some local irritation.

DR. HARTZELL:

We are talking about the peridental membrane?

DR. SMITH:

Oh, yes, lead poisoning, mercury poisoning—those are matters over which we have very little control and see very little of. I don't know when I have seen a case of that kind; certainly not in years, and it did not occur to me to refer to it. I believe there is such a thing as mercurial poisoning, an inflammatory condition resulting from it that may be called constitutional, due to other than local causes.

If you will permit me I would like to say just one word in reply to Dr. Orton in regard to women in case of pregnancy. I have this to say, that I cannot conceive of such a thing as that influencing in any way the conditions of the teeth, and if this gentleman has witnessed anything of that kind I would be glad to hear a recitation of the case. I have carried a good many women through pregnancy under this treatment without any more show of inflammation of the gum tissue than those that are in an ordinary or normal condition. In other words, there is no more reason why women should not go through the period of pregnancy, which is a perfectly normal condition, without irritation, without loss of teeth, without increase of decay—there is no reason why she should not go through pregnancy without any injury to the teeth. As I said, I have carried a great many through that period and it has never had the slightest influence upon them when they were under proper prophylactic treatment. As to what mercurial or lead poisoning might do in some cases, that is not worthy of our consideration at all. There might be certain conditions possibly that would influence and aggravate the inflammation of the gums which would not take place without mercurial poisoning, but I do not believe the gentleman who has spoken or any other gentleman has ever seen a case of lead or mercurial poisoning which showed itself in the mouth which was not accomplished by a local irritation.

Dr. Orton:

Have you ever had a case of a patient who was salivated?

Dr. Smith:

Oh, yes, of course I have. I don't think that is altogether relevant to the subject.

Dr. Hartzell:

Oh, yes, it is relevant! If it is possible to produce inflammation in the gums by means of mercury or lead carried in the blood stream why may there not be other irritants that will do the same thing? If you admit the one you cannot fairly deny the other. I have had the warmest admiration for the men who have been able to take cases clinically and take their microscopes and search for the etiological factors and actually prove their clinical experience by the microscope, and there are men who have taken ten to fifteen years to work out a result of that kind, and while I have been pleased by this paper, and have been enthused by the vigorous and strong attitude of the man delivering it, and while I admire his courage, yet I have been compelled to feel that that old saw about the Quaker city was based on fact. I feel it was due to Chicago and Dr. Talbot that a man so eminent in his profession as Dr. Smith should have read that book giving the result of the work of Dr. Talbot, with a heart open to conviction, instead of simply passing by that ten years of hard labor which gave us an insight into the etiology of the most mysterious disease from which teeth suffer, and I think you gentlemen who have heard him will give credit to a man who has just as much fighting blood as Dr. Smith.

DR. SMITH:

Just allow me a single word. I do not at all want to disparage Dr. Talbot's work, but I am unable to see just what it is. I do not think it amounts very much to us as dentists, or to this generation, whether third molars are going to degenerate and will not appear a thousand years hence—I do not think that is a matter that we are at all interested in. I don't believe in it. I do not believe there are any just grounds for that position. That is one of Dr. Talbot's points and the other is the one I read to you this morning and I said I was unable to draw any conclusions from it. That was a paper that was well digested because it went to the hub of the universe. It went to Boston. He took the best he had there. We can hardly expect anything else. I read what he said and I defy you or any other man——

DR. HARTZELL:

You only read a part of a paper.

DR. SMITH:

I read the whole, every syllable, and I said at the conclusion that I could not make anything out of it. I cannot make anything out of it, but I should be glad to have you if you can. I would like to have you tell me what he meant by that. There were two professors there, one from Tufts and one from Harvard and they said, "We have been treated to a very scientific paper, but we are not qualified to discuss it." Another from Springfield said, "This Dr. Smith has put forth a theory that he can cure pyorrhea by polishing the enamel." That comes as near to the truth of my position as what this gentleman has said to you regarding my position on pyorrhea. I never made such a statement that pyorrhea could be cured by polishing the enamel. If you have got any such idea in your heads you had better get it out, because I never intimated anything of the kind. Dr. Talbot said in reply to that, "I don't know anything about Dr. Smith's methods, I never practised them," but he said, of course. I could not polish out a pyorrhea pocket. I think there is just as much sense in that as there is when he speaks of gingivitis and pyorrhea. We have gingivitis when the teeth come through the gums; it is a perfectly normal process, but he says you have no pyorrhea. He said when I came to the point of treatment which I have suggested for pyorrhea, he said at that meeting in Boston, "I don't know anything about the methods of Dr. Smith."

Dr. Hartzell:

I am still holding my little mental machinery open to conviction, and I admire the work of both Dr. Smith and Dr. Talbot, and I am going to try in my own way to tell you what we believe Dr. Talbot was driving at when he wrote his book on "Interstitial Gingivitis," and I am going to try to sustain the teaching I have followed for four or five years in regard to pyorrhea, and I am going to use the microscope in that word picture.

I firmly believe and have taught that pyorrhea may be due to both local and constitutional causes. Any condition that will set up an inflammatory state of the gum and the pericemental membrane at the neck of the tooth as surely will cause the absorption of process and loss of those teeth where such conditions obtain. Now then, what other causes besides local irritation must we take into consideration? I say there are numerous other conditions through which it can come from systemic causes. You may have the necks of the teeth absolutely clean, and yet you may have absorption of bone still going on there. How can this be? Well, nature has established a balance, we must remember, for every normal condition. When that balance is disturbed we have pathological states initiated at once. We will all agree on that, I think. Now, the very clinical fact that our friend Orton brought out a few moments ago is an indication to the observer that mercury and lead can be taken into the system and there cause local inflammation, irritating those terminal vessels that supply the pericementum of the tooth and bring on the conditions that you have seen, namely: gingival inflammation, loss of alveolar process, loss of teeth. The very clinical fact he mentioned in that live little talk he gave us a moment ago was pregnant with proof. So the true interpretation of the story has been given, not by clinical experience alone, but by the microscope in the hands of Dr. Talbot, who owes much to Professor Hektoen and others. By the way, Professor Hektoen, who has written "The American Text Book of Pathology," the best we have, is a man worth reading, and he is a westerner, too. (Laughter.)

And now those constitutional conditions that make possible the inflammation in the gingivæ and bone and cause absorption of the bone are worth looking into for just a moment. They can have inflammations in them from other than local causes. The doctor admitted that when he said there was such a thing as salivation. When the balance between the waste and repair is disturbed and uric acid and urea that should be eliminated remain in the blood stream, you then have by the presence of those deleterious wastes inflammatory conditions set up in the endothelial membrane which lines the vessels, which leads to absorption of the bone, and it is known that the inflammation that is set up in the vascular tissues at the point of those vessels that pass through the alveolar process produces a type of inflammation which we call in pathology "cloudy swelling," continually blocking the vessels which supply the peridental membrane, producing oedema and partial stasis which nature seeks to relieve by absorbing the alveolar process, thus making room for the swollen vessels in a way disastrous to the alveolar process. The cells become cloudy and are obscured and swollen and the nucleus is disturbed in its activity. It means that where a vessel passes through the bone, if the vascular lining be inflamed, the vessel is closed and the blood cannot pass through it as before. Finally the result is the occlusion of the venal circulation, and all the waste which retards the circulatory process remains until the accumulation is dissipated from the over-filled vessels in the gums by vigorous massage, hastening elimination of wastes, local cleanliness and astringents. Here we come right in line with Dr. Smith. Anything that can stop the inflammatory state of the gum will check the damage to the bone. What does nature do for the circulation? Endeavors to reëstablish it. We all agree that the alveolar process is sensitive tissue, and the minute you take out a tooth it is a very useless tissue. I mean the minute you initiate an inflammatory condition of any kind in the alveolar process it is so sensitive to irritation that nature takes it away. If you initiate an inflammatory process in the tibia or the ulna nature will not take it away; on the contrary, it will often thicken the bone, but if you initiate it in the alveolar process you will find the bone disappearing. It is very sensitive to inflammatory conditions. I say the blood supply to the peridental membrane passes through the alveolar process, and you will find it will take away the bone just as surely as if the irritant were extrinsic and on the necks of the teeth. We find it in cases where we do not find tartar. I think this theory which has grown out of clinical pictures aided by the microscope is a true one, for we have plenty of slides that show this condition. We have plenty of clinical material that bears out that idea, and we ought to give credit to the fact that there are other conditions besides accumulations around the necks of the teeth that cause inflammation of the alveolar process, and neglect no line of treatment that will help to save teeth. So I feel that perhaps Dr. Smith will give me credit for trying honestly to interpret what our view is and that we are trying to save teeth, and cause dentistry to occupy a higher plane than that of the mere mechanician. These are the things for which Dr. Talbot as well as Dr. Smith is striving.

There are two or three other things with which I disagree. He said he proved that pyorrhea is caused only by local irritation by the fact that if he took out the tooth that was undergoing pyorrhea the disease was cured and he had no more pyorrhea. That statement does not prove anything to me. If you took out a normal tooth and the alveolar process would stand up there for all time, then his statement would be proved, but we note that it does not make any difference whether a tooth is affected with pyorrhea or not, extraction in either case results in loss of alveolar process. I mean if a permanent tooth is taken away the alveolar process goes too, so his argument proves nothing.

Dr. O. A. Weiss:

We have heard today one of the ablest addresses it has ever been my pleasure to listen to. The essay was entitled "Some Points of Difference." As the essayist started out with a discussion of prophylaxis, I was wondering where the idea of difference, suggested in the title, came into consideration. Whether it was his opinion that we were doing nothing—making no effort—along the line of prophylaxis, or whether it was his opinion that we had not succeeded in accomplishing anything along that line, I was unable to determine. Surely there can be no difference of opinion regarding the need of prophylaxis. As to the accomplishment of prophylaxis, I do not know what other men are doing, but I believe most of them are working as conscientiously as I am endeavoring to do, and I am sure I am doing all I know how to do in attempting to establish prophylaxis with my patients. Every patient that comes to me and receives services, gets at the finish a little lecture and usually a demonstration regarding the proper care of the teeth and mouth. Now just because we do not succeed in having our patients do what we instruct them to do is no good argument against us, nor does it prove that we are doing nothing along that line. We might as well condemn the Christian religion simply because all have not yet been brought into the fold. There may be some who are afraid, as Dr. Smith said, if they arrive at that point where they are going to prevent diseases of the teeth and mouth, they would have nothing to do, yet this is hardly deserving of serious consideration, for no true professional man would entertain any such feelings. As previously said, I was unable to see in the beginning of the essay where the "points of difference" come in, but as the essayist proceeded I discovered some of them as doubtless many of you have likewise done. One point of difference was with reference to his discussion of the question of pyorrhœa alveolaris. I feel very much as Dr. Orton expressed himself a little while ago regarding the essayist's consideration of Dr. Talbot's work upon this topic. I regret very much that Dr. Talbot's work should have been treated so slightingly. Dr. Talbot is the only man in this country today who has done any real research work—scientific work—upon the question of the etiology of pyorrhœa. When a man spends so much time, and money too, in doing original research work—work, such as no one else had done before or since—as Dr. Talbot has done upon this subject, it seems to me that the noble profession of dentistry of which we feel so proud, could certainly do no less than show its appreciation of his work and give him full credit for what he has done. If there are any persons who do not understand Dr. Talbot's work upon the subject of pyorrhœa I do not know whose fault it is. Dr. Talbot has certainly written a great deal upon this question, and any one able to study any complex subject should be able to understand his writings. Dr. Talbot does not use the term gingivitis in the sense in which it was presented here today, but uses the term "interstitial gingivitis," a term coined by him.

DR. SMITH:

I would not like to have it go out that I misquoted Dr. Talbot. I quoted him exactly.

DR. WEISS:

I took it for granted that you were familiar with Dr. Talbot's teachings, and what you have said does not fully represent his work or his ideas.

DR. SMITH:

I said distinctly that I quoted from him.

DR. WEISS:

Let us spend just a moment considering Dr. Talbot's idea of interstitial gingivitis. When we speak of gingivitis we mean inflammation of the gums. This is not the disease usually called pyorrhœa alveolaris. Pyorrhœa alveolaris, as you all know, means a flow of pus from the alveolus. Dr. Talbot discarded the term pyorrhœa alveolaris because it suggests nothing regarding the cause of this flow of pus and, unless we recognize the cause of a disease we can hardly expect to treat it intelligently, therefore he introduced the term "interstitial gingivitis" which means not only inflammation of the gums but inflammation of the deeper tissues—the peridental membrane and the alveolar process as well. The disease is in fact an inflammation of these tissues, accompanied always, sooner or later, by resorption of the alveolar process, and quite frequently by pus formation around the tooth. A flow of pus is not necessarily an accompaniment of interstitial gingivitis with resorption of alveolar process; this is a point that Dr. Talbot emphasizes and is what he meant in the paper from which the essayist quoted. We can have interstitial gingivitis without pyorrhœa, but we can not have pyorrhœa without being preceded by interstitial gingivitis. Dr. Smith seemed to think that because we could produce inflammation of the gums or pyorrhœa by mercurial poisoning, it did not have any bearing on the question. It seems to me that it most certainly does have a bearing on the question, and if you consider it carefully I do not see how there could be any doubt about it. If we can get an effect on the alveolar process and peridental membrane by mercury or some other drug, why can we not get a similar result by some other poison in the system as a result of disease or faulty metabolism?

This is precisely what occurs, and is what Dr. Talbot has termed auto-intoxication, the result of faulty elimination of waste products. When we have certain irritating substances in the system, whether it be mercury, lead, phosphorus, or some complex waste product of bodily function in health or disease, it manifests itself in those tissues which are least able to resist it, and the alveolar process being one of the unstable structures is first to succumb. Some of Dr. Talbot's research work has been carried on upon the lower animals. He has found that dogs have interstitial gingivitis, and pyorrhœa often times—that they lose their teeth just as man does from this same disease. He has had regulating appliances upon dogs' teeth for the purposes of studying the pathology. In diseased conditions where the jaws have been affected as in tuberculosis, syphilis and scurvy, and in cases of extraction of teeth, in all of these conditions he has shown by microscopic examination that the process of breaking down or resorption of the alveolar process is an inflammatory action identical in every instance. In this connection I would call attention to the movement of teeth in orthodontia, the so-called "physiological process of resorption" is in fact a pathological process, an inflammation resulting in resorption of bone. If we produce too intense an inflammation and then get pus infection, we can lose a tooth just as teeth are lost by "pyorrhœa." I have seen two instances of this kind. There were other points of difference in the essay which I should like to discuss, but as the hour is late I shall not do so.

Dr. C. M. Work (Iowa):

I have not much to say in regard to this part of the paper, except that the essayist in his remarks this morning said we would never receive the respect of the medical profession and lamented the fact that we did not have their respect. They may not have the respect of the medical profession in Philadelphia, but I am sure in this part of the country we have the respect of the medical profession, and anyway, what do we care for the respect of the medical profession if we have the respect of the people, of the general public, and I do not doubt but that we have the respect of the public in as large a degree as the physician has. If Dr. Smith had confined his remarks to prophylaxis and the care of patients who were troubled with pyorrhœa alveolaris I would have been very glad. I was very glad to travel seven hundred miles to see and hear Dr. Smith, and my only regret is that he departed so much from the established and accepted methods of dentistry. In the line of operative dentistry I have never heard such an exposition as he made tonight of the filling of teeth. I shall not discard the use of cohesive foil for the use of soft foil alone. They used to use a soft foil alone, but there was not the percentage of teeth saved at that time as there is at this time with cohesive foil, porcelain and the other material we have at hand. We are saving teeth now by the use of these fillings because we are saving more teeth and for a greater length of time with those other materials. Dr. Smith is, in his way of teaching prophylaxis, doing a great deal of good, but if we accepted his ideas in entirety what would be the result? The Lord made the teeth of the sheep a certain shape, and he made man's teeth in a certain shape, and those teeth we saw this afternoon were sheep's teeth; they are all made in the same shape. There is a certain purpose in trying to save the teeth and I think in what we are doing and trying to do we are entitled to the respect of the people and they do respect us. The matter of root filling I think is all right. That method is a very sensible one. He uses cotton and creosote. I use cotton sometimes to treat the teeth, but I use absorbent cotton. I have lately had a chance to make a crown for a tooth that was filled thirty-four years ago with cotton—I don't know whether it was raw cotton or absorbent cotton. The doctor uses paper which is a product of cotton, and perhaps it goes through nearly the same process that cotton goes through. He has failed to mention the use of gutta percha, the greatest and most convenient thing the dentist can use; I have used it for twenty-one years in filling root canals. His idea of filling root canals may be all right and may go in the East but it will not go in the West. He knows as well as I do that gutta percha is the only satisfactory thing the dentist can use. He has forgotten to mention it altogether; I don't know why. I think his idea of wedging cavities is wrong. The first filling I ever made was made that way and when I was a boy seventeen years old, and the filling is in the tooth today. It is not very beautiful and it is made of cohesive gold. As I said before, I am sorry to hear the doctor advance such ideas. I think he is a great man, but there are other great men, and I think Dr. Smith is entirely wrong in regard to his ideas of filling teeth, but if I could be converted to his ideas I would be glad, because it is certainly an easy method of filling teeth.

Dr. F. B. Kremer:

I would like to say something about Dr. Smith's paper, but it is too late. He has given me a text upon which I could talk the rest of the night, but I want to get through and go home. He has been pretty thoroughly criticised and for that reason I do not wish to take up the points that have been discussed. I recognize in Dr. Smith a man who takes a strong position in order to drive home certain truths. A man can do nothing else but take a strong position if he is desirous of doing good. I should be a little afraid of his pathology and a little more afraid of his bacteriology, especially in the matter of root filling, but in one position I think he is right so far as clinical observation can teach us anything, and that is, if I understand him correctly, that pyorrhœa is always of local origin. That I believe most implicitly. I do not believe that pyorrhœa, primarily, is produced in any other way, but I do believe that after it appears other contributary causes may add to its progress. Not primarily so, but secondarily I believe they may. I have nothing upon which to base this opinion except clinical observation. I want to pay a tribute to Dr. Smith, especially after the things some of my friends have said. I had occasion to remove a gold filling from a molar that Dr. Smith had put in fifteen years ago. There was something else the matter and I had occasion to use the space and that gave me an opportunity to remove the filling. I asked how he could make gold as hard as that which I found in that filling. He said he did it with hand pressure. I had to employ a bur and used two of them to cut the filling out. As I remember it, he told us after giving the demonstration on the blackboard, that we should turn our attention to something scientific, and forget the mechanical. I would like to show Dr. Smith some specimens of practical dentistry in my possession that would go a long way toward convincing him that the time has not yet come for us to abandon our efforts toward mechanical perfection.

I want to ask the doctor one question and then I will quit. I don't know whether he meant it or not, but he said his reason for removing the contents of the pulp canal with the Gates-Glidden drill was because by so doing he removed the germs of putrescence, "that every tooth had within itself the elements of putrescence." I didn't believe at the time that he meant it, but if he did I want to discuss it further. I do not believe it any more than I believe that the insertion of cotton will "draw from the surrounding tissue bad odors," and thereby cause trouble.

Dr. Smith:

The fact that you do not believe it does not make it so.

Dr. Kremer:

Neither does your assertion that such is the case carry conviction to me for your statement is at variance with every modern belief and teaching in pathology and bacteriology.

Dr. Thos. B. Hartzell:

I want to say that while I thoroughly approve of Dr. Smith's treatment so far as it goes, the only reason why I attacked his paper was on account of the etiology, because the continual treatment certainly *does* seem to aid the patient. A patient comes to you whose daily elimination of urine is from twenty to thirty ounces when it should be forty to fifty ounces; you have irritating matters that remain in the system which do act deleteriously on the endothelian membranes. That was the only reason I spoke of it, because I wanted my men who have been sitting here under my teaching to know that there are more causes than local causes for this condition. Let us have the evidence on both sides.

Dr. Smith:

It may be difficult in individual cases to account for all the phenomena attending them. It is not safe to place all physical conditions under rigid rules. Twenty-nine years ago when I commenced practice in Philadelphia I used cotton saturated in creosote as a filling in the root of a bicuspid tooth. Recently I had occasion to withdraw that filling and the cotton came out with a decided odor of creosote upon it. It was in every way in perfect condition. The very general prejudice against cotton as a permanent root filling I believe to be largely due to lack of knowledge of the nature of the two kinds of cotton—absorbent cotton and raw cotton—employed for this purpose. The former is almost exclusively used, while the latter—raw or natural cotton—is the only material suited to this purpose. There is just one use to which absorbent cotton may be put in the dental office and that is for wrapping around a suitable root-canal instrument for drying out the canals. For drying *cavities,* in all cases, fine Japanese absorbent paper is much better and more convenient than cotton. For root fillings raw cotton is much to be preferred to the absorbent.

I have reasoned out certain things respecting cotton as a root filling. We know that absorbent cotton will absorb odors as well as moisture. It is the nature of this cotton to draw to itself anything that it comes in contact with, hence absorbent cotton in an untreated root, or one in which there are pulp remains, will take up and retain odors not only from putrescent pulps but from decaying tissue in the tubules. It can not help taking the odors from the decaying matter in the interior of the tooth. These concentrated odors absorbed into the fibers of the cotton induce irritation which expresses itself in periosteal inflammation.

In reply to the doctor who has given us an excellent explanation of the difference between local and systemic irritations: There is no good reason why we should not understand this pathological condition expressed in gum tissue except as we attempt to force belief in preconceived notions and old methods of thinking. Why should poisons, such as lead and mercury taken into the system express themselves in gum tissue except it be bcause of a local irritation that already exists at the point of attack? That point is where the irritative infection is usually found in greatest quantity—about the lower anterior teeth as a solid. Irritation of the gums is not a special diagnostic symptom in mercurial or plumbic poisoning in *children*, nor in *adults with edentulous* mouths. The local effects of mercurial poisoning as seen in the mouth, is in connection with *untreated* teeth on the lower jaw; it is here that it finds its special expression. Every tooth that is left untreated is a source of irritation in the gums. In erupting, the infected surfaces of teeth cause irritation that is productive of a degree of inflammation: Mercurial poisoning, from general medication, increases that inflammation. That condition belongs in a greater or less degree to every tooth after its eruption, increasing with age, and is relieved only by the process known as prophylaxis treatment. Under this treatment all irritation and all inflammatory conditions disappear and their systemic effects also disappear.

Inflammation may be expressed more readily in the gums than anywhere else because they are terminal tissue. The unnatural redness is indicative of stasis in the blood vessels. Remove all irritative matter from the teeth and prevent its return by frequent, often daily, treatment, and you will find in cases of lead or mercurial poisoning that the circulation will be quickened, the vessels will regain their tonicity and the tissues will return to a normal and healthy condition.

Whether it is accepted by the profession or not, I *know* that alveolar pyorrhea is due to local inflammation. And further I know that removal of the cause, without resort to constitutional medication or dietary interference will cure it. Another thing; the gentleman speaks of not understanding me regarding the extraction of teeth affected with pyorrhea. I did not say nor intend to leave the impression that absorption of the alveolar process when the tooth is taken out is due to the pyorrhea. Absorption is a perfectly physiological process, beginning as soon as the tooth is extracted. I intended to say that the removal of the teeth cures alveolar pyorrhea because it removes the source of the local inflammation. Is that not true?

Dr. J. W. Penberthy:

Dr. Smith never cured pyorrhea in the world by merely extracting a tooth, but he simply removes the point of local irritation. I admire the doctor for the vim and vigor with which he takes his stand, but I claim a case of pyorrhea can never be cured unless it is done through the system, never in this world. I want to say further that there are a great many cases of so-called pyorrhea that are no more pyorrhea than a scratch on my finger would be pyorrhea. From what I have read and observed in regard to this disease I believe that if you throw the prophylaxis aside and stimulate those parts after removing the accumulations it will enable them to throw this off. You will have to continue the treatment unless you treat systematically. The doctor says he has cases he has treated for two years. I have a case in my own practice, a lady, who has been treated for two years. She had her teeth cleaned every few months and she said her mouth was as bad as when she started. Pyorrhea will return every time as long as you attempt a cure by local treatment. You have got to resort to local instrumentation, and the moment you resort to that you give the teeth prophylactic treatment and you are strengthening the gum tissue, but you have not cured the disease. The fact that you have extracted a tooth and demonstrated that you have cured pyorrhea is no proof whatever.

Dr. Shibley:

Do you believe the devitalization of the pulp benefits the diseased condition?

Dr. Smith:

I believe devitalization of the pulp in some cases decreases the tendency to pyorrhea. I do not remember to have seen a case of true alveolar pyorrhea that had its beginning about a devitalized tooth. The reason for it is that in young people we have a vigor and activity in the pericemental tissue that we do not find in elderly people. There comes a time when cemental tissue is markedly decreased in thickness and the activity of the pericemental tissue is proportionately decreased. Destroying the pulp in cases of that kind destroys the vital relation between it and the pericemental tissue. The probable explanation is when the pulp life is withdrawn the pericemental life is quickened and becomes more enduring because the cementum is no longer being converted into dentine. Evidence of this is found in two conditions:

First—What has already been stated, pyorrhea seldom or never *begins* about the roots of devitalized teeth.

Second—Exostosis occurs much more frequently on the roots of devitalized teeth than on the roots with living pulps. Is not this due to an effort of nature to increase the retentive force in the roots of teeth? Is it not that by increasing the thickness of cemental tissues she adds tenacity to the external life of the tooth and so adds to its attachment to the alveolus? I think it is.

Dr. Penberthy has said here that "Dr. Smith never cured alveolar pyorrhea by *extracting* a tooth." That seems a bold statement and reminds me of the goat that ate up a red flag and afterward vomited it up in an endeavor to stop an express train. I have never known the statement equaled for unjustifiable and unsubstantiated contradiction except by the author of that remarkable article, "The Trained Dental Nurse." Dr. Rhein, in discussing my paper, "Alveolar Pyorrhea, Its Cause, Sequela and Cure," read before the New York State Society in 1903, uttered practically the same thing, but neither statement has hindered me in the least from going right forward with the cure of alveolar pyorrhea in every instance where I have found it necessary or desirable to extract for this purpose. When Dr. Penberthy can lay aside his prejudices long enough he will come to understand that alveolar pyorrhea is an inflammation, not an "irritation," due to a cause which cannot exist without the teeth, and he will recognize that cure necessarily follows the removal of the cause.

If it be true that mouth infection—septic human teeth—is the cause of so grave a condition as endocarditis and troubles of that nature, how important it is that we have regard to the human mouth in all cases. If mouth infection will manifest itself in the heart, why may it not manifest itself in any of the vital organs? I have cured troubles of this sort, especially diabetes.

Physicians in Philadelphia admit that I have eliminated sugar from the urine, upon at least two patients. If infection from the mouth will go to the heart and to the kidneys, it will go to the lungs, it will go to any vital organ of the system. Experience has taught me that when as a dentist I look into the human mouth for pathological conditions, the emphasis is to be placed, not on pin-head cavities in teeth, but on those external conditions which create decay and lay the foundation for many serious, many fatal systemic diseases.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States and its possessions, Cuba, Canada and Mexico. All other countries $1.75 a year.

EDITORIAL.

A REVOLUTION IN THE TECHNIQUE OF GOLD INLAY WORK.

At the November, 1906, meeting of the Chicago-Odontographic Society Dr. W. H. Taggart in discussing the subject of gold inlays incidentally remarked that he had devised a method of making gold inlays which greatly simplified the process and insured perfection of results. In New York at the meeting of the Odontological Society January 15, 1907, he read a paper and made a demonstration of his method, which according to the reports elicited the greatest enthusiasm on the part of his hearers.

The method seems to promise a complete revolution in the making of gold inlays, doing away as it does with the necessity of fitting a matrix. The detailed technique of the process will shortly be given the profession, but briefly stated it is as follows:

An inlay of wax is made in the cavity in the tooth, and carved and contoured to the proper form. This wax is removed, put in a mold and reproduced accurately with gold. The perfection of result is really remarkable. The editor of THE DENTAL REVIEW was shown one of these inlays by Dr. Taggart in November and the work is beautiful in the extreme. The process of reproducing the wax in gold involves the use of the oxy-hydrogen blowpipe and compressed air, and by this method reproductions of gold may be made from wax models of any form or for any purpose with the utmost accuracy. Artificial gold plates may be made in this way and in fact the principle seems to have a very wide range of usefulness, the limit of which no one can predict.

The profession is to be congratulated on this new development, and particularly is Dr. Taggart to be felicitated on having been the means of bringing it about.

THE EDITOR'S DESK.

MY TREE.

In October, 1902, in this department I wrote of a favorite tree which I visit every year on my vacation. It is a hard maple standing by the roadside three or four miles from my old home in the country, and I religiously drive to see it every summer. Last year I took a couple of snap shots of it which I present to my readers. But no picture can do it justice. The tree is so dense in foliage, and so rich in color—so perfectly alive in every fiber, that a photograph can give no conception of its beauty. It is trim and symmetrical as if chiseled in one of nature's most artistic moods, and every

breath of wind sets it quivering with emotion. I have never seen a tree so full of life or so exquisite in outline, so varied in its beauties or sturdy in its entrenchments in the soil. As will be seen by the illustrations it leans slightly, but not with any sense of weakness. Its inclination is toward the east and I suppose the scientific reason for this would be advanced that the prevailing winds in this region are from the west or northwest. But I know a better reason than this. Familiar as I am with the deep-seated sentiment which permeates this tree I have attributed its leaning in this direction to the fact that each morning it bows a graceful salute to the rising sun, and as habits leave their impress on all of us it is but natural to suppose that this beautiful tree after all these many years of bowing should bend toward the eastern sun.

I could write chapters on the sentiment intertwined with this tree. I am a lover of the forest and the fields, of rocks and rivers, of hills and hollows, and the sweeping currents of the wind. I love the tangled growth of nature, and the serried ranks of golden grain. I love to listen to the songs of birds, and to the roaring of a torrent, to the hum of insects and the patter of the cooling rain. But above all I love a beautiful tree and this is the most beautiful one I ever saw. For years I have watched it, studied it and worshiped it. It grows a trifle more exquisite each time I see it, and I sometimes wonder when the limit is to be reached. It has led me to the study of other trees and I have found this study a never ending source of delight. Ride through the country in a carriage, an automobile or a railroad train, and you will never lack for entertainment if you learn to study trees. Everywhere in nature these beautiful banners of the fields are waving for your delectation, and they grow more and more interesting as you observe them closer. They are without money and without price spread out for the eye of the poorest wayfarer, and yet "Solomon in all his glory was not arrayed like one of these." Learn to love trees and you will never know what it is to be lonely.

DOMESTIC CORRESPONDENCE.

Editor DENTAL REVIEW:

In your January, 1907, number, in reference to the paper of Dr. Kells and the discussion following I wish to say it is in many respects not only interesting but comes somewhat in the nature of a surprise to the average practitioner.

Now I wish to say at the beginning I am only an ordinary mush-fed practitioner whose lot it has been to practice in a little one-horse town for twenty-six years. I haven't so much as the rightful honor of the D. D. S. that adorns the offices of many of our up-to-date dental parlors, but what little I know of the practice of dentistry has been gleaned from the hard school of practice and home study, for please bear in mind those of us who began the study and practice of dentistry thirty years ago and were fortunate enough to have a good liberal dental education were the exception, not the rule. Let us pause and inquire into the origin and primary cause and the pathological conditions leading up to an alveolar abscess. The first and primary step I believe to be, the formation of gas inside the pulp chamber, which upon a sufficient amount of pressure is forced out at a point of least resistance which we all know to be through the apex, coming in contact with the surrounding membrane of the root. It in turn becomes distended, the amount of pressure and distention being modified by the amount of gas generated in the pulp chamber. Should it be rapid the distention will likewise be rapid and the pain and tenderness correspondingly acute.

Now what is the next step in the process of development? Simply an impeding of the free circulation and ultimately a well defined blood clot and the failure of the heart's action to dislodge it. We next have the inflammatory stage which later on, by breaking down the tissues involved, we have the formation of pus which in turn burrows through the process and gums and thus makes its exit, much to the joy and relief of the patient.

These are the varying and shifting stages, as I believe them to be and when once understood will yield to radical treatment most readily. While Dr. Kells is in no immediate need of help, as I am quite sure he has demonstrated his ability to care for himself, yet I wish to add my testimonial to immedate root filling. I have practiced it now for the last twelve or fourteen years and while I have no record of the number of cases treated, I believe they will reach into the hundreds, and I must say further that I can not now recall the time when I have had any trouble arising from this practice, and as the perspective appears to me, the time is not far when it will be the accepted rule. That it is practical, feasible and scientific there is no doubt to those who have tried it, as many operators can demonstrate without the fear of successful contradiction.

Yours truly, DR. J. W. BYERS.

CHARLESTON, ILL.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Finishing Amalgam and Gold Fillings:—After building filling full trim with knives and files which must be sharp. On the proximal surface of filling bring to a polish with cloth strips, wet pumice and chalk. Finish remainder of filling with rubber cup of proper size and wet pumice and chalk. In finishing in this way you avoid heating the tooth and will not have as many cases of hyperemia afterward. —*H. O. Smith, Newton, Ill.*

Strength of Porcelain:—When porcelain is closely imbedded in the cement it is almost impossible to break the edge without first wearing away the cement. I believe it has more strength in that way than any other substance. You can take a crystal from your watch and break it in your fingers, but when it is imbedded in cement as an inlay is, you can stand on it with your full weight, and not break it.—*C. F. Rodolph, Muscoda, Wis.*

Do not Varnish Inlays after Setting:—The varnishing of an inlay after setting, for the purpose of keeping the moisture from the cement, by almost all inlay workers has proven incorrect. The cements that are used today in setting inlays are what are called hydraulic cements. We have better success with those cements, for after a proper crystallization has taken place the moisture is immediately allowed to flow over.—*W. H. Cudworth, Milwaukee, Wis.*

Contact Points:—Without contact points it is impossible to make and preserve the lingual and buccal embrasures into which we invite the excursions of food, so that the margins of our fillings may be constantly cleansed. I believe it is possible by the use of contact points to make and maintain such embrasures that the use of the toothpick will be unnecessary; the contact point so separating the bolus of food that it passes through these embrasures and finds no opportunity for lodgment.—*W. R. Clack, Clear Lake, Iowa.*

Extraction in Orthodontia:—Extraction has *no place* in modern orthodontia. We do not even admit of *rare exceptions* as was done by us a few years ago. The loss of teeth makes the treatment of these cases more difficult and a failure from the standpoint of occlusion and facial balance—because the arches are so constructed that the removal of one tooth ruins the possibility of that mutual support which each tooth renders to its neighbor and to the entire denture, which under conditions of normal occlusion always exists.—*William G. Law, Berlin, Germany.*

Putrescent Pulps in Odontalgia:—I have found the following formula convenient in treating putrescent pulps:

Thymol.
Menthol, *āā* grs. **xxv.**
M. till liquified.

In treating cases of odontalgia the following has proven successful:

Chloral hydrate.
Camphor, *āā* grs. **xx.**
M. till liquified.—*C. E. Abstein, Chicago.*

Cicatricial Tissue Due to Lancing:—As regards the point of cicatricial tissue forming over lanced teeth it is rarely the case that you ever get a perfectly formed cicatrix. The pressure underlying those teeth usually pushes them into such a position that the gums separate and bulge far apart, immediately after lancing. But should this not be the case, there is absolutely nothing in the statement that the cicatricial tissue is derogatory to the easy erupting tooth. On the contrary it absorbs more readily than normal tissue. All secondary formed or cicatricial tissue is the first to break down when there is pressure brought to bear upon it.—*B. G. Maercklein, Milwaukee, Wis.*

Carbolic Acid:—Carbolic acid is a good disinfectant, a good germicide and an antiseptic. Comparing the laboratory experiments with formalin and carbolic acid, we will find that formalin is the stronger germicide, but carbolic acid has a property something like iodoform of being a penetrating antiseptic. If you put carbolic acid in a tooth it volatilizes and it must be volatile in order to be detected by smell. As used in a tooth it is a strong germicide, and although it takes a few hours to completely sterilize the bacteria and destroy the spores of bacteria, the carbolic acid clings to the tissues and forms a sterile coagulum, so that, I think, it is a good agent.—*Otto Holinger, Chicago.*

Replacing a Facing:—In repairing a facing on a bridge or crown the success of your operation depends greatly on the adaptation of the new facing to the old backing. This depends on getting your holes drilled in the right place and grinding the facing to fit. This can be very simply done by taking a pellet of cotton, saturate with alcohol, then rub it over a blue or black ink pad such as used for rubber stamps. Make a coating over the backing and press the facing to position. The ink will mark the place where it is necessary to grind. Wash thoroughly after facing is adapted and set with a slow setting cement. The pins may be secured by means of the Bryant system or by riveting.—*C. J. Hadley, Chicago.*

Adoption of Fads:—One of the greatest detriments to a successful practice is the adoption of fads and not being able to drop them when they are contraindicated. I think that the great majority of us are liable to become enthusiastic over some form of procedure, especially if it appeals to us personally, and we seem to have success in its practice. However, this class of men appeal to me more than the ultraconservative, who will not try anything new until it has been demonstrated to be a success, and who are then far behind the procession, because it has not been by the efforts of this latter class, but rather by those of the former, that dentistry has reached the high plane in science and the arts that it occupies today.—*F. E. Cheeseman, Chicago.*

Inlays for Anchoring Bridges:—There is no longer any necessity of extending the margin of a crown beneath the gum margin of bicuspids and molars. The substitute I would offer for the old method is a crown inset into the substance of the tooth, the gold margin of which is flush with the tooth's surface. The normal anatomical formation of bicuspids and molars constitutes a natural and most serious bar to the perfect fitting of a band. An examination of typical tooth forms gives instant conviction of the irrationality and impossibility of attemptating accurate and scientific coaptation at the tooth's neck, at once the most important and vulnerable point. It is all too evident that the almost universal custom of procedure is based on wrong mechanical principles and produces unhygienic, unsanitary and disease-engendering conditions.—*Joseph W. Wassall, Chicago.*

Attaching Facings to Caps With Porcelain:—Make the cap of platinum soldered with pure gold. The post should be of platinum or iridio-platinum. Let facing end of post extend one-quarter of an inch from cap and take impression with cap and post in position on the root. Take bite if necessary. Set cap and post in impression and run cast of investment compound. Grind facing to suit and bend pins up out of the way, but closely in contact with protruding end of post. Cut off unnecessary end of post, leaving enough to reach pins. Invest and attach post to pins and cap with a little pure gold. Remove investment and bake on the porcelain body. The first baking should not extend higher than the pins or the contraction upon cooling might check the facing. This makes a much stronger crown than where facing is backed and soldered to cap, is little more trouble and costs less.—*R. E. Sparks, Kingston, Canada.*

Non-Corrosive Sterilizer for Dental Instruments:—Requirements: In form, liquid; in action, rapid, certain, penetrating, bland, volatile, cleanly, uncontaminating, non-toxic, non-irritant, antiseptic, germicidal, portable, inexpensive, analgesic, easily prepared, convenient to apply to each instrument, each time used, and non-corroding.

℞	Specific echafolta (Lloyds)	℥ jss
	Alcohol deodorized	℥ss
	Glycerin Pur.	Gtts. x
	Ol. Rose Geranium	Gtt. ij
	Mur. cocaine (coarse crystals)	Grs. xxxviij
	Acid carbolic (crystals)	grs. xx

M. Sig. as directed.

Procure a glass bon-bon dish three inches in diameter by one and one-half inches in height; sides oval; in use pour of compound from well corked bottle enough to cover a bur-head, drill, excavator or searcher point, and before or after using either dip in the compound, each time either is used, and at night before laying away. Forceps-points wet with the lotion will become instantly sterilized. Two or three drams of the compound will last a month if evaporization is met by the addition of alcohol and the dish is kept covered when not in use. A piece of thick rubber-dam makes a good cover. The dish and two ounces of the compound need not cost more than a dollar. I have used the preparation for years and *know* its efficiency. Its value is beyond price.—*A. C. Hewett, Chicago.*

MEMORANDA

THE AMERICAN DENTAL SOCIETY OF EUROPE.

The next meeting will be held in Rome, Italy, March 29-30 and April 1, 1907. A very cordial invitation is extended to members of the profession to be present.

J. W. Gale, *Hon. Sec'y,*
Cologne, Germany.

TWO SOLDIERS ELECTED TO HONORARY MEMBERSHIP.

Major Henry Raymond of the barracks and Dr. S. D. Boak, dental surgeon at the barracks, have been made honorary members of the Ohio State Dental Association. The distinction is a rare one, only six honorary members having been elected to the association during the twenty-two years of its existence.

SAN FRANCISCO DENTAL SOCIETY.

At the regular meeting of the San Francisco Dental Society the following named officers were elected for the ensuing year: President, Dr. H. A. Fredrick; vice-president, Dr. L. V. Levenger; recording secretary, Dr. L. C. Heller; financial secretary, Dr. F. J. Lane; treasurer, Dr. W. A. Knowles; librarian, Dr. M. A. Greenlaw.

ARKANSAS STATE BOARD OF DENTAL EXAMINERS.

The Arkansas State Board of Dental Examiners will hold examinations at Eureka Springs, May 27, 28, 1907. A. T. McMillin, secretary, Little Rock. The Arkansas State Dental Association will hold its annual meeting at Eureka Springs, May 29, 30, 31, 1907.

Henry P. Hopkins, *Secretary and Treasurer.*

"SELF-PROPELLED VEHICLES."

This book is a practical treatise on all forms of automobiles. It is written by James E. Homans, A. M., and published by Theo. Audel & Co., 63 Fifth avenue, New York. This is the fifth edition, 598 pages, price $2.00. It is "a book for owners, operators, repair men, intending purchasers, and all interested in automobiles." If this does not include nearly all creation we are no reader of the signs of the times.

SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

The tenth annual session of the Southern California Dental Association will be held in Los Angeles, May 6, 7 and 8, 1907, at the same time the Imperial Council of Mystic Shrine meets here, and all members of the dental profession contemplating visiting Southern California at that time will confer a favor on the association by notifying the secretary,

CHAS. M. BENBROOK,
455 South Broadway, Los Angeles, Cal.

DETROIT DENTAL SOCIETY.

On the 16th of February, 1907, will be celebrated the twenty-fifth anniversary of the founding of the Detroit Dental Society.

A splendid program has been arranged, including a clinic, banquet and lecture by Dr. C. N. Johnson on "Cavity Preparation for Inlays."

A very cordial invitation is extended to all reputable practitioners to attend this meeting.

For any further information apply to

GEORGE F. BURKE, *Sec'y,*
315-317 Stevens building, Detroit, Mich.

CONSOLIDATION OF THE FRATERNAL DENTAL SOCIETY AND THE SOCIETY OF DENTAL SCIENCE OF ST. LOUIS.

At a joint meeting of the Fraternal Dental Society and the Society of Dental Science of St. Louis, held December 18, 1906, a consolidation of the two societies was effected, the society to be known as the St. Louis Society of Dental Science.

The officers and committees for the ensuing year are: D. O. M. LeCron, president; Richard Summa, vice-president; Clarence O. Simpson, secretary; W. E. Brown, treasurer. Executive committee, W. L. Whipple, E. E. Haverstick, Herman F. Cassel. Advisory council, George A. Bowman, A. H. Fuller, Adam Flickinger, William Conrad, Burton Lee Thorpe, Edward H. Angle, E. P. Dameron.

CLARENCE O. SIMPSON,, *Sec'y,*
457 Century Building, St. Louis.

RECENT PATENTS OF INTEREST TO DENTISTS.

836,299. Dentist's tweezers. Welby W. Burgin, Richmond, Ky.

836,967. Dental mirror. Walter H. Grant, Boston, Mass.

837,871. Toothbrush and dentifrice bracket. Lewis W. McConnell, and W. V. Gage, McCook, Neb.

837,423. Dental handpiece. Alson C. Sargent. Des Moines, Iowa.

838,296. Dental work. Harrison D. Best, Pittsburg, Pa.

838,299. Head rest. Arthur W. Browne, Prince Bay, N. Y.

838,027. Tool for handling artificial teeth. Frederick L. Hunt, Asheville, N. C.

838,415. Artificial tooth. John H. Jackson, Boston, Mass.

838,849. Porcelain and metallic crown. Charles A. Davis, Pasadena, Cal.

838,648. Combination hand mouth mirror and chipblower and flushing and spraying device. Oliver T. Robertson, Milford, Ohio.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C

RESOLUTIONS.

Resolutions adopted by the Northern Illinois Dental Society at its annual meeting at Aurora, October 19, 1906, regarding the death of Dr. Charles R. Taylor:

WHEREAS, Our friend and fellow practitioner, Dr. Charles R. Taylor, of Streator, Ill., has recently passed away from earth—and although he was not a member of this society, we greatly appreciate the interest in took in our proceedings for the uplifting of our chosen profession and the betterment of mankind; therefore, be it

Resolved, That we recognize the beauty and nobility of his character and the greatness of his professional life, which his interrupted work leaves as our sacred heritage; and that while we mourn his loss we cherish the memory of the high ideals which his example for many years has placed before us;

Resolved, That we extend to his wife and daughter our hearfelt sympathy and condolence in this hour of affliction, and that a copy of these resolutions be sent to them as a token of our respect.

DR. C. R. TAYLOR.

Resolutions of respect passed in his memory by the National Association of Dental Examiners, in session in Atlanta, Ga., September 17, 1906.

WHEREAS, Having just learned by telegram of the departure from this life of our friend and brother of this association, Dr. C. R. Taylor, a member of the Board of Dental Examiners of the State of Illinois, and

WHEREAS, Dr. Taylor has shown himself to be an honest and upright gentleman, and an earnest worker in this association for the advancement of higher requirements upon the part of those seeking entrance to the dental profession, and being himself an example of uprightness, probity, conscientiousness, integrity, industry, intelligence and gentility, we, the members of this association, keenly feel the loss we have sustained by his removal to that bourne from which no traveler returns; and mingle our tears with those of his surviving wife and daughter while we endeavor to uncomplainingly submit to the inevitable forces of nature, which separate us from those we love, and

WHEREAS, We shall forever in this life miss the smile of his genial countenance, and the benediction of his personal presence. We shall always reap the benefits of the influence of the purity of his thought and the spirit of righteousness which permeated his whole character and illuminated his every action; therefore, be it

Resolved, That this resolution be spread upon the minutes of this association, and that an engrossed copy of the same be presented to his surviving family.

CHAS. P. PRUYN,
J. A. HALL,
F. A. SHOTWELL, *Committee,*

DR. CHARLES C. CHITTENDEN.

Resolutions of respect passed in his memory by the National Association of Dental Examiners, in session in Atlanta, Ga., September 14, 1906:

WHEREAS, Dr. Charles C. Chittenden, late of Madison, Wis., was for many years a valued and prominent member of this association, having in the course of his connection therewith graced the meetings of this society by acting as its president, and having for many years occupied, with marked distinction, the position of chairman of the committee on colleges, where he rendered services of inestimable value, not only to this association, but to the whole profession of dentistry at large, and

WHEREAS, Dr. Chittenden departed this life in the month of December, 1905, and

WHEREAS, This association, in regular convention assembled, unanimously adopted a motion appointing a committee to prepare suitable resolutions touching this sad and lamentable event, therefore your committee recommends that it be

Resolved, That in the life of Dr. Chittenden he exemplified all the graces and virtues of an upright Christian gentleman, the fidelity and affection of a loving brother in the truest and broadest sense of these words, the patriotism and public spirit of a true and loyal American citizen; and, through the inherent force of his firm and manly character, his courteous and kindly nature and his sympathetic and affectionate disposition, he enjoyed the confidence, respect and esteem of a large and appreciative clientele, and

Resolved, That in his death his sorrowing family have lost a devoted, unselfish and affectionate member, at whose untimely demise we mingle our tears with theirs, and this society has suffered an irreparable loss in that it has been deprived of the benefit of his untiring and unremitting interest and work in all that made for the uplifting of the association, the improvement and advancement of the science of dentistry and for higher ideals and more permanent results in dental education; and that each member of this society who enjoyed the privilege of a personal acquaintance with him has lost the benefit flowing from the beauty of his character and the inspiration to better and higher things, reflected in his gracious and noble personality; and the world of dentistry has lost one whose whole life was a patient and constant struggle toward higher attainments, through more thorough, honest and conscientious methods of dental education; and the entire community has suffered a loss which it is hard to believe can ever be filled, and

Resolved, That these resolutions and the discussion thereon be spread in full upon the minutes of this meeting, and a copy thereof be sent by the secretary to the bereaved family.

(Signed) J. A. HALL,
CHARLES P. PRUYN.
F. A. SHOTWELL.

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, MARCH, 1907. No. 3

GOLD INLAYS.*

BY S. J. KNOWLES, D. D. S., CHICAGO, ILL.

Mr. President and Members of the Chicago Odontographic Society: To have the privilege of reading a paper before this Society is indeed a great pleasure, and I trust I may be able to reciprocate by imparting something of interest.

My intention tonight is to describe a practical and accurate method of making gold inlays by taking impressions of a cavity and working entirely on cement and plaster models in the laboratory, not seeing my patient until the completed inlay is ready to be cemented into the cavity.

The subject of inlays for the past five years has received more than ordinary attention in the dental world, and dates back, I am told, to the time fifty years ago, when, with varying success, porcelain teeth or pieces of fused porcelain were ground to fit cavities, the adaptation and fit merely being approximate. Also to the time twenty years ago when such a well-known man as the late Dr. Swasey made many large successful gold inlay restorations. Our present Dr. Ames has also worked for the past eighteen years, as much as any one I know, to demonstrate the usefulness of cemented gold inlay restorations. I am in a position where quite frequently I see inlayed fillings made by my associate and preceptor, Dr. Wassall, that are and have been successfully protecting teeth for from five to sixteen years. For more than five years I have myself been making inlayed fillings that are protecting teeth satisfactorily in practically every case, even though many are not as well made as is possible now. I believe today, with the improved methods, appliances and technique, the question of practicability and permanency of the inlayed filling, if properly constructed and set, has been settled by most of us as a conservative and thoroughly practical method of restoring lost and broken down tooth structure. It is in my own practice no longer experimental or questionable as to the best known method of securing permanency and preventing recurrent caries. The added certainty of retention is due to the possibility of giving to a cavity a perfectly mechanical locking form, it being practically an impossibility for an inlay to be dislodged by any vertical or lateral force, impact or strain. I shall refer to this locking cavity formation a little later on in my paper.

---

*Read before the Chicago Odontographic Society, November 20, 1906.

At this point I wish to quote a paragraph from the late Dr. W. C. Barrett's book on Oral Pathology and Practice, chapter on Fillings: "Were it possible to fill an ordinary tooth with something that would be perfectly congenial to the tissues there is little doubt that all filled teeth would be comfortable, and herein may be found a reason why certain materials, aside from their lasting qualities, make the best fillings."

This, I believe, emphasizes the value of cement as a filling material, admitting, of course, its one great disadvantage—the wearing and wasting away of its bulk.

There are several advantages that a gold inlay possesses over any of the mechanically retained gold or amalgam fillings, which I will enumerate as follows:

1. The absolute sealing of cavity against moisture, with cement.
2. The binding effect of cement to support frail teeth.
3. More perfect restoration of contour and contact points.
4. More perfect reproduction of occlusal surfaces with fissures and cusps.
5. Greater compatibility.
6. Less conductivity of thermal changes.
7. Time and discomfort saved to patient.
8. More general application, with permanency.

(1) The absolute sealing of the cavity with cement, used in connection with an inlay, gives an inlay for that reason greater immunity to recurrent caries. With a mechanically retained metal filling, the question is one of adaptation to cavity walls and not adhesion. Any expansion or contraction of a metal filling allows at once the ad-

mission of micro-organisms within the cavity margins, and, of course, exposes the dentine to their destructive by-products.

When an inlayed filling is made to perfectly fit a cavity (which is possible) and is properly cemented to place, the cavity is so sealed that a leaky condition such as occurs about an ordinary metal filling, is impossible.

The permanency of a cement line about an inlay is dependent to a great extent on its minimum thickness, both for strength of adhesion and diminished tendency to wear away. Comparing this cement joint to the wood-joiner's joint of glue, the minimum amount gives the maximum strength, and it must be remembered, too, that cement is much stronger than glue.

The closer the inlay fits against the walls and margins of a cavity the less cement there is exposed and in consequence less to wear and wash away. Judging from the way cement wears cupped out, when used alone as a cement filling, allows certain comparisons. It has been my observation that cement wears out, from the margin of an inlay, only as deep as the margin is wide, and no deeper. This is, I consider, if correct, a very important fact in inlay work. So I repeat, if an inlay is made to come in close contact with cavity walls and margins, there is practically no cement to waste away, and if it does wear it is only to a depth as great as the margin is wide.

This explains to me one of the principal reasons why inlayed fillings are less subject to recurrent caries.

(2) The binding effect of cement to support frail teeth is certainly a great advantage, for the crowning of many good teeth may be deferred for years which would not stand the strain of a long continued malleted gold filling, with its wedging force continually at work. The old way with such teeth was to either make an uncertain fitting and more or less irritating banded crown, or an amalgam filling, which is equally uncertain.

(3) The more perfect restoration of contour and contact points may be accomplished because the entire polishing is done out of the mouth and the inlays are set in place with perfect contact.

This is a most important factor, for what is more annoying to a patient than a filling with poor contact? No doubt you all have had patients come to you who have been more conscious of teeth with bad contact than they were of caries. Bad proximal contact is, as we all know, one of the predisposing causes of new caries about an apparently perfect filling.

Proper wedging of teeth is, of course, an important step in restoring contour, it being necessary at times, for best results, to wedge for two and three weeks.

(4) The more perfect reproduction of occlusal surfaces is possible because a carved and swaged occlusal surface may be given to an inlay, showing the proper fissures and cusps, thereby more nearly restoring it to normal condition.

(5) Greater compatibility occurs because undercuts are not made in sensitive and vital tooth structure, also because the tooth is not subjected to any shock from long continued malleting.

(6) Less conductivity of thermal changes is due to the intermediate cement lining, which, though only of the slightest film, tends to break up the conduction of thermal changes.

(7) The time and discomfort saved to the patient is very important, especially with many of our busy business men, for it seldom requires more than twenty minutes to prepare a single proximal occlusal cavity and take impressions of it.

The pain and discomfort a patient is saved from the preparing of deep retaining grooves and undercuts, the usual long and tedious malleting and subsequent polishing of proximal surfaces, with the much despised strips, disks and polishing files, etc., is surely a most decided advantage, as this is all done away with in inlay work.

(8) By the more general application with permanency, I mean that it is possible to make good fitting inlays in cavities that would practically be impossible to fill perfectly with gold plugged in, piece by piece, on account of the difficulty in keeping cavity dry and many other reasons.

I wish to refer, for the sake of illustration, to a practical case I had a few weeks ago for a patient of mine who came to me with a large, well formed upper left third molar presenting a cavity on the mesial surface extending cervically under the gum for a considerable distance, also over the occlusal surface involving the mesial pit through to and including the lingual fissure. It was difficult for the patient to keep his jaws open for more than two or three minutes successively, owing to severe cramps in the muscles of the jaws. I was able in this case, however, after properly wedging, to prepare, take impressions, and finally cement to place a good fitting gold inlay and get a result that I consider will be far more sanitary and satisfactory than would have been the case had I tried to make a gold crown with its irritating gold band, or an uncertain lasting amalgam filling that I am sure I could have never properly polished.

I shall only speak of cavity preparation in a general way, for this is a part of the work that permits of much individual expression. It is understood by all that a cavity must be so shaped than an impression or matrix may be removed without distortion; that is to say, it is slightly larger at the enamel margins than at bottom, or base, and any undercuts are avoided. The enamel margins are beveled to a certain degree and polished, affording them a protection when gold inlay is cemented to place. The mechanical looking form is a very important thing to observe in the preparation of cavities.

You will notice by some of the models that I have passed around how, in bicuspids, where the two pits and one proximal surface are involved, a slight enlargement of the distant pit affords a perfect, mechanical lock against dislodgment from any lateral or vertical stress. It will be noted that this same principle may be carried out in practically every instance.

The extensive cutting and opening up of a cavity in inlay preparation is another great step forward, for it insures the more positive removal of all carious tissue. This removal of caries in the preparation of cavities for metal fillings (not cemented) is much more difficult, as the tendency is to leave standing all the tooth structure possible, simply to insure having enough for anchorage and the ease of inserting the metal.

The instruments to be used for cavity preparation are many. In my own practice I use steel burs and excavators only to open into the cavity, doing the principal preparation with small round carborundum stones, which I mount myself and trim to different shapes by moving a ten-inch coarse flat file across these points while they are rapidly revolved in the hand-piece of the engine. Occasionally I use smooth grits of corundum stones same shapes as the carborundum, as well as plug finishing burs and Arkansas stones.

At the conclusion of the cavity preparation comes the taking of impressions and bites to be used in the laboratory in the making of the inlay. The process is as follows:

1. A bite is taken in modeling compound.

2. A contour impression is taken in modeling compound, using a small tray.

The bite when poured in plaster of Paris is used as a guide to give the inlay the proper occlusion, and the plaster model obtained from the contour impression is used for the proper contour.

3. The impression of the cavity itself is obtained by using the Detroit Dental Manufacturing Company's "Perfection" compound.

The compound for impression is softened and molded into a small cone-shaped mass and hardened. A 36-gauge soldered copper band or a 28 to 32 gauge copper matrix is adjusted either around or between the teeth, as the case may require, and while held in position the point only of compound cone is softened by heating, when, using considerable pressure, it is pressed into cavity and held until thoroughly chilled with cold water. The impression when hard may be easily removed, providing, of course, there have been no undercuts in cavity.

The prepared cavity or cavities may now be temporarily filled with gutta percha and the patient dismissed until the inlay or inlays are ready to be set.

The bite, contour impression and cavity impression are now placed in a small pasteboard box, of which I have several for this purpose, and upon which is written the patient's name, date of appointment, and any memoranda which may be necessary for yourself or assistants while work is being done in laboratory.

The laboratory steps are as follows:

The bite and contour impression are each poured in plaster of Paris.

The cavity impression is invested or imbedded in a pad of soft plaster about two inches in diameter, so as to protect any frail extensions of the compound beyond the cavity margins, also to make easier the subsequent handling of impression in making the cement top or model.

This round pad of plaster, when sufficiently hard, is trimmed square and the compound impression as well as plaster is trimmed so as to leave not more than 1-32 of an inch extending beyond the cavity margins. This trimming eliminates any undercuts that will be objectionable on the cement model. After the trimming of impression has been completed the plaster block, as well as the impression, is rubbed with pure talcum powder to assist in preventing the adhesion of cement.

In making the top or model of cavity, a sufficient quantity of Ames Dark Brown Crown and Bridge Hydraulic Cement is mixed to about the same consistency as is used in making an ordinary cement filling. The whole mass of soft cement is then rolled into a ball and rubbed with pure talcum powder to smooth the surface as well as to prevent adhesion, when the cement is forced down over the impression. The soft cement model, still remaining on the invested impression, should be submerged in water and left until the cement has crystallized, which usually requires about fifteen minues. Being hydraulic, it is necessary to give moisture to the cement in order that we may obtain the maximum strength with the minimum expansion or contraction.

The cement model is easily separated from impression by submerging both in hot water for a few minutes to allow compound impression to soften.

Allowing the impression was correct, the resulting cement model will be, practically speaking, a perfect reproduction of the original cavity. This is proven by the fact that an inlay made to fit a model will fit a cavity equally well, if the details have been accurately carried out along true mechanical lines.

The model of cement is now invested with Plaster of Paris in a small round steel tray or cup, a part of the Brewster inlay swaging outfit. The surplus plaster when hard enough is trimmed down to the edge of tray.

When possible it is well to have the invested cement model remain over night before swaging, to insure the proper hardening of cement and plaster. The cement model ought to be kept wet by placing a pledget of wet cotton on it, in view of the fact that the cement is hydraulic.

If any of the margins on the cement model are not well defined they may be brought out by trimming the cement with a bur or an excavator.

With the model trimmed, the first step in obtaining a matrix after thoroughly annealing a piece of platinum foil one one-thousandths of an inch thick, is to cut it the required size, place it over the cement model and partly adapt, by using a tightly rolled piece of cotton held in a pair of heavy foil carriers. The model and platinum matrix, with the cotton in position, are placed in the inlay swager and the platinum partly swaged in place, using considerable pressure.

The platinum is removed from model to be annealed again, after which the model and platinum matrix are placed in the swager, this time without any cotton, and the matrix swaged perfectly to place. After removing the model from swager, the matrix is thoroughly burnished at the margins to remove any folds. It is then annealed, patched, if necessary, and swaged.

In cavities that are at all irregular it is very difficult, in fact, at times impossible, to obtain a matrix without having any tears in the platinum. These holes in matrix are very easily covered and patched by using Pack's gold foil cylinders of different sizes. Gold foil remains in position much better than correspondingly small pieces of platinum foil.

The entire floor of matrix is stiffened and reinforced with 22-karat gold solder, which completes the making of matrix. The matrix is put aside temporarily, while a piece of softened modeling compound is pressed into the cement model and trimmed to the exact contour and occlusion desired, using as a guide the plaster bite and contour model. A mellatte metal die and counter die is made, reproducing the carved occlusal surface of the modeling compound, and a gold tip swaged, using 36-gauge coin gold.

The gold tip of occlusal surface is trimmed to fit matrix, waxed in its proper position and invested, leaving a side open through which to solder. The under side of matrix is coated with Chinese white paint before investing to prevent gold from flowing through in soldering.

After removing the wax from investment by boiling, the inlay is soldered by fusing the solder in through the proximal side, and in simple occlusal cavities a hole is cut through the bottom of matrix and the solder melted through it.

The point is that an occlusal surface is difficult to correctly reproduce if a swaged gold tip is not used, while a proximal surface is comparatively easy to shape up by grinding.

The polishing of the inlay is done in a short time, using the models as a guide in trimming to margins, etc.

The cavity side of polished inlay is roughened and grooved by using thin vulco-carbon disks or small steel wheel burs. To cement the inlay to cavity great care must be exercised to have the cavity perfectly dry by using alcohol, chloroform and warmed air, preceded by carbolic acid to thoroughly disinfect dentine as well as to coagulate the albumin of cavity ends of tubuli.

GOLD INLAYS.

BY W. D. N. MOORE, L. D. S., D. D. S., CHICAGO, ILL.

Never before in the history of dentistry has the mind of the profession been more earnestly engaged than in recent years as to what methods of practice and what filling materials it shall adopt to most satisfactorily meet the ravages of decay in the natural tooth, and to render that tooth a useful organ until the last vestige of it remains. It has long been conceded that no one method or material will fill the highest requirements under all conditions and circumstances. Consequently many means are at the disposal of the operator to be called into use by the decision of his best judgment in each particular case.

The smaller cavities in teeth have been successfully cared for by all of the materials at our disposal, but the more difficult problem to solve, and the one that has baffled the minds of the most aggressive members of the profession has been—what is the best treatment for extensive carious conditions in the crowns of natural teeth. Many teeth already containing large fillings, especially posterior teeth, demand the attention of the dentist for refilling, in which case the new fillings are invariably much larger than their predecessors. In brief, badly broken-down crowns—where the insertion of a gold filling would not justify the severe nervous strain upon the patient or the expense of vital energy by the operator, where temporizing should become obsolete, and where amalgam has proven its treachery—are the cases that have tried the skill of every operator. The practice of prematurely subjecting these cases to the prosthetic side of dentistry, ruthlessly destroying the remaining tooth structure to adorn it with an artificial substitute, the gold crown, or to restore its usefulness

---

*Read before the Chicago Odontographic Society, November 20, 1906.

by some more modest type of artificial crown, alike in many cases disastrous to the tissue about the natural organ, should be abandoned. It is the sacred duty of every dentist to treasure most highly the remaining tooth structure of every badly broken-down tooth and to spare at any cost its untimely sacrifice preparatory to an artificial substitute, and not until this is fully realized is the profession rendering the most good to mankind.

That it is a common occurrence to have patients call upon their dentist, complaining of trouble from a gold crown in many instances placed over a tooth with an ordinary-sized cavity, and requesting its removal, not to speak of the numerous cases where their removal is advised by the operator on account of ill results produced, and the tooth subsequently filled to normal restoration, causes one to wonder why the members of a profession should so radically differ in this one particular. Many reasons may account for it, but to be charitable, one will be mentioned, viz.: the belief among members of the profession that large, complex cavities can not be satisfactorily filled and these teeth restored to normal conditions. As a result of such opinion, no one practice in dentistry has wrought more havoc upon human teeth or greater injustice upon the human race. From the first attack of caries upon a tooth to the last remnant of its crown a persistent fight against invasion must be kept up, using every weapon at hand best suited for the conditions presented. Many filling materials are used to preserve human teeth and all of them have a distinct place in the practice of dentistry, but probably none a wider field of usefulness, especially in posterior teeth, than the one under consideration—the gold inlay.

It seems to be an age ripe with many methods of filling teeth, all seeking a common purpose, viz.: the preservation of the human tooth. The method of inlaying teeth has survived its day of experiment and has bravely borne the harsh criticism inflicted upon it; but while it may be said to be only in its infancy, yet we have assurance of its filling a place in its own province of usefulness so admirably that the profession has been compelled to recognize its worth, and its adoption promises to become more and more universal. The principles underlying the inlaying of teeth are in so many particulars ideal that it should afford the dentist an opportunity to do more along certain lines than he has ever before been able to accomplish in restoring the natural crown of a tooth to further years of usefulness. The reasons for this are clear. The inlay does not exact so much from what may be already frail walls of a cavity for its attachment to that tooth as is demanded of other metallic fillings whose attachments are altogether mechanical. In these fillings considerable cutting is involved to secure sharp angles, while the inlay is retained, in part mechanically, aided by the adhesion of cement. This important truth enables the operator by the use of the inlay to add strength to a weakened tooth structure rather than to diminish it. The use of an inlay also avoids any possible injury to enamel margins in its insertion, which is not always true of the gold filling, since these margins are ofttimes damaged by the use of a gold-plugging instrument. Frequently cavities are so sensitive that the necessary cutting to obtain suitable anchorage for a gold filling is practically impossible; here the inlay comes to the operator's rescue. We are all familiar with the extensive ravages of decay in the teeth of young patients, especially the first permanent molars, where the common practice has been to temporize or to use amalgam, neither of which has been prolific of the best results. Here the gold inlay performs a mission of great utility and satisfaction to the little one. Since cavity preparation for a gold inlay is so favorable to the possibilities of child endurance and can be accomplished by short sittings, without any loss of time to the operator, this method is well-nigh ideal. If the gold inlay can do nothing more than this—to spare the child from that dread of dental operations occasioned by the renewal of fillings, or avoid that discoloration of tooth structure caused by amalgam at which his taste in later years will rebel—it has indeed performed a definite and worthy purpose. I know of nothing that tends more to the advancement of a higher education in the child's mind regarding dentistry, at the same time lessening dread of the dental chair, than this method of filling cavities where inlays are indicated. This training has been too often overlooked by the operator, and to this it is probably due, in a large measure, that we meet so many unappreciative patients among persons of more mature years, something that is discouraging to the best efforts of a dentist.

The method by which an inlay is inserted is less liable to cause injury to the dental pulp or peridental membrane than in the case of condensing gold in a cavity. Frequently it is our duty to fill teeth so loosened by disease about their roots that the procedure incident to the insertion of an inlay is in kind accordance with the conditions prevailing. In addition to these particulars, the operation of inserting an inlay is not so exacting, physically, upon the patient or the operator. It would seem that the individual of today is exhausting so much vital force in strenuous living as to reserve but little for the consideration of his dental requirements, that it behooves the dentist to so facilitate his methods as to meet these growing conditions. No undue reflection, however, is intended to be cast upon any of the other metallic filling materials, especially foil or crystal gold, which have for so many years most honorably earned a high regard from both dentist and layman alike. When a gold inlay is properly inserted a perfect sealing of the cavity is accomplished and the surface is hard and uniform—no pitting or roughening ever possible to occur—which is not so of other filling materials. For density and strength it is without equal; and as for the esthetic effect, while not ideal, yet when made of a high-karat gold solder, is an improvement on many other forms of metallic filling materials.

It may be well to consider here some of the more general indications for gold inlays. The gold inlay, like other new ideas of practice, on account of some favorable feature belonging to it, has been so enthusiastically adopted by some operators that certain well-tried and reliable methods have been practically abandoned. This I think is a grave mistake, for it takes years to ascertain what the outcome of any new method will be and a certain amount of conservatism in dental practice is always necessary. While much commendation has been given the principle of filling teeth with gold inlays, and while it is possible to employ this principle almost universally, yet I would not recommend its indiscriminate use. The proper indications for the use of gold inlays are based upon sound judgment after a careful study of conditions and requirements in each particular case. It would not be advisable to adopt this method for filling all cavities in anterior teeth, while there might be conditions presented that would warrant it. The same may be said of small pit and fissure cavities in bicuspids and molars. These cavities can be so successfully filled with gold without any inconvenience to the patient that the employment of gold inlays would be contraindicated. To insert gold inlays in small cavities calls for an extension beyond what is justifiable, since gold fillings so thoroughly serve the purpose and when completed no question arises as to the dissolution of cement, as in the inlay method. Not only in small cavities is its contra-indication to be noted, but in those cavities in posterior teeth the filling of which would involve two, or sometimes more, surfaces of a tooth where the extent of decay is not too great to admit of a permanent operation without the necessary extension of the cavity for an inlay. But the true value of the gold inlay is apparent in those cases where the insertion of a gold filling would be either too laborious an operation for the operator or too great a shock to the patient, or where the attempt at restoration with a gold filling would be utter failure. Here it is when the gold filling has reached its limitation that the gold inlay comes nobly to the rescue of the natural crown of a tooth and evades that treacherous substitute, the artificial crown. In teeth loosened by mechanical injury or disease and those teeth possessing a membrane about their roots that will not withstand the impact of a gold mallet, the gold inlay offers many advantages as a permanent filling. The successful treatment of sensitive cavities, especially for young patients, has long been a difficult problem and has caused the adoption of many methods. Cement has been used, only to give temporary results. The necessary cutting to get sharp angles for the retention of a metallic filling was either too severe for the patient or practically impossible. It is in these cases that a gold inlay fills the requirement with less expense of nerve force to the patient, and yet permanent results are obtained. Every operator is required at times to care for cavities on those surfaces of teeth most difficult of access, increased ofttimes by tense buccal muscles, where the time necessary for the cavity preparation for any filling is itself all the patient can endure, not to speak of the discomfort of a rubber dam necessitated in the insertion of certain fillings. Associated with these are cavities so situated that the rubber dam is not reliable for the exclusion of moisture for a sufficient time to insert gold, and yet good results are readily obtainable by the use of a gold inlay. Cases are not rare where the abrasion of every tooth in the mouth is so great that pain ensues. This condition, when all the teeth are in position in the mouth, is due to heavy stress from strong muscles of mastication and certain habits of the patient. The same condition arises in the mouths of patients where teeth have been prematurely lost and the few teeth left are considerably worn down as a result of this misfortune. To whatever these conditions are due, a restoration by the hardest possible filling material is demanded.

Platinum and gold in combination has been recommended and used with good results in less extensive cases than those just mentioned. The insertion of this material in bicuspids and molars would be too slow an operation to warrant its use, and since the hardness and density of the gold inlay is so clearly demonstrated its use in these cases is at once suggested, and it may be similarly used in anterior teeth.

We are frequently called upon to provide an artificial substitute for a single missing tooth where the teeth on either side of the space are perfect. Provision must be made to prevent the drifting together of these teeth and also to prevent the elongation of the tooth opposing the space, but the question arises, are we justified in devitalizing the pulps and in a measure destroying the crowns of two teeth to insert one. It seems a terrible sacrifice. Nearly all of these cases would favor the inlaying of the abutment teeth for attachments, particularly when they are already filled on those surfaces approximating the vacant space, thus accomplishing a satisfactory result with the least possible tooth destruction. It can not be universally practiced, however, but there are many cases where the gold inlay will serve as an excellent attachment. Many times we desire to use a root, as an abutment for a bridge, that does not seem quite equal to the stress that it would be expected to bear. Should the approximating surface of the adjacent tooth, however, present either a filling or a cavity, we have a ready means of overcoming the difficulty. If a gold inlay is fitted to this tooth and attached to the abutment crown, we need have little concern as to the permanency of the operation, for the root, supplemented by the support and stability that the inlay will lend, will be equal to the requirements. This is especially practical when that root is somewhat impaired and yet extraction is not indicated.

Cavity preparation is necessarily an important feature in this work. Some operators have failed to secure permanent results with inlays and this has induced skepticism in the minds of others. These failures have been due not to any lack of stability in the inlay principle, but to a lack of appreciation of the mechanics involved. Much laxity has prevailed in regard to cavity preparation, even to the extreme of using indefinite, saucer-shaped cavities, relying solely on cement for the retention of the inlay. Such haphazard methods must be discarded if the operator would avoid failure.

In the preparation of a cavity for an inlay of this kind we must ever keep in mind that the inlay which is to be placed there must be retained primarily by the mechanical relation between tooth and inlay. This should be laid down as a basic principle, and can be accomplished only by a close study of the direction and amount of force to which the inlay will be subjected. No one set rule for cavity preparation will serve for all cases, but in many instances must be left to the best judgment of the operator. Since so many similar cavities occur, however, under similar conditions, a few general rules may be given which in the main would be safe to follow. In all classes of cavities the general form should be such that when the greatest stress of mastication is brought to bear upon the inlay it will be met by sufficient mechanical resistance to prevent its dislodgement. When this form of cavity is secured that stress will tend to more firmly lock the inlay in the tooth. The theory of extension for prevention must be observed, but since gold inlays are especially applicable to extensive cavities this principle has already been accomplished. In general, the cavity preparation should be much the same as for a gold filling, with certain exceptions. All undercuts and perpendicular walls should be avoided and the axials walls should form a slightly obtuse angle with the pulpal walls and the seat of the cavity. This does not necessitate the beveling of enamel margins, as the enamel rods at the margins will then be supported by sound dentine. In case the margin of a cavity is in close proximity with the summit of a cusp, it should be carried well beyond this point to admit of a sufficient bulk of gold to withstand the stress likely to be brought upon it, and thus protect the enamel margin. This can be accomplished nicely by the use of suitable stones and sandpaper discs. In proximo-occlusal cavities the occlusal portion of the cavity should be carried well over that surface of the tooth to allow a decided dovetailing into a strong portion of the tooth structure. Too great stress can not be laid upon occlusal retention for such inlays. It is the only reliable retention in this class of cavities, and yet in many instances is by some operators entirely overlooked. The angle formed by a proximo-occlusal margin should be well rounded by the use of stones and sandpaper discs, as this is a point on the cavity margin liable to fracture under stress of mastication if left unprotected. The angle of the step should be slightly rounded to facilitate the adaptation of the matrix. All the peripheral margins should be nicely polished with sharp burs, Arkansas stones and fine discs until a smooth, clean-cut outline is presented.

In larger restorations the cavity preparation must also be in accordance with the principles mentioned, in so far as they can be applied, but there are times, of course, when it may be necessary to deviate slightly from these rules to meet the requirements of the case. It is my belief that an inlay can be so firmly secured in a cavity that nothing short of a fracture of the tooth will permit of its dislodgment. This is all that could be asked of any filling. I am decidely opposed to the use of pins in the dentine or posts in the pulp canal of a tooth for the purpose of retaining an inlay in a cavity. In some few cases, however, where an inlay is to serve as an abutment for a bridge, a short post might be used to advantage; but, as a rule, it is entirely unnecessary, complicates the operation, and I have seen cases where it has done serious damage, in some instances splitting the root of the tooth. This has occurred where the retention of a large inlay has depended upon the post in the root, and the cavity improperly prepared offered every advantage tor a lateral dislodgment, causing a sufficient leverage upon the post to fracture the root. In short, the anchorage for an inlay should be so accomplished that no lever force can result from any possible stress brought upon it. If these details have been carefully carried out, little fear need be entertained as to the loosening of the inlay when properly cemented in the cavity. Correct cavity preparation is necessary, not only for the retention of an inlay, but its importance is equally manifest in facilitating the perfect adaptation of the matrix to the cavity, which is so essential to the making of a perfect inlay. Since so much depends upon cavity preparation in this work, it behooves every operator to thoroughly master the technique required for the careful preparation of these cavities.

Great diversity of opinion has existed as to what material and what thickness of material should be used as a matrix for these inlays. The choice has been between platinum and pure gold of different gauges. As both materials have their advantages and disadvantages, a careful consideration of these might be well at this time. The employment of platinum for a matrix, on account of its tenacity, would seem to render it less liable to fracture under the burnisher during the process of its adaptation to the cavity walls than pure gold and its high fusing point precludes the possibility of destruction during the operation of filling the matrix. The ease, however, with which pure gold may be made to conform to the cavity walls, outweighs, in my mind, any advantage that platinum may possess. This is due to that characteristic softness which is so requisite in a matrix material. Acknowledging the greater strength in platinum over pure gold, its greater rigidity demands more force to obtain its adaptation, counteracting its virtue of tenacity. So the lesser strength possessed by pure gold, when we consider its greater pliability, is sufficient to withstand any force required to adapt it to a cavity without the necessity of fracture. Its fusing point is also sufficiently high to permit the use of a 22-karat gold solder, without the necessity of any disaster to the matrix. There is a distinct feature in gold that makes it behave so amiably when brought against the cavity walls and enamel margins, that cannot be claimed for platinum on account of its harsher characteristics, so that I am decidedly partial to and would advocate the general use of gold for this purpose. It is a good plan, however, for the operator to use that material which in his hands gives the best results. When platinum has been employed for this purpose foil .001 of an inch has commonly been used, while gold of various gauges has been utilized. The thickness of the gold to be used is largely dependent upon the nature of the cavity and whether it is to be burnished in the cavity or swaged to a model of it. In small, simple cavities of easy access No. 60 gold foil can be used to advantage by burnishing it directly to the cavity, but its extreme delicacy demands great care to prevent distortion during its subsequent manipulation. A matrix of this thickness to that of 34 and even 32-gauge pure gold plate can be used, its thickness depending upon the size of the cavity, the method of adaptation and of making the inlay. A thick matrix to a reasonable gauge would offer some advantages. When it has been adapted it will retain its shape with a greater degree of certainty. An inlay having a thick matrix, when cemented in a cavity, presents a mat of pure gold about the enamel margins that will admit of further burnishing while the cement is crystallizing. To adapt a thick matrix by burnishing is a difficult operation, and in certain cavities not easy of access it is practically impossible. If the matrix is to be swaged, thicker material can easily be adapted and is generally used in this method of adaptation. For general practice a gold matrix about .0035 of an inch in thickness is preferable, but certain cases will necessitate the use of material of greater or lesser gauge. Beaten gold has been considered a softer material than rolled plate, which would seem to make it more suitable for a matrix. It is so difficult, however, to procure it with a surface free from checks and of accurate gauges, that it makes it an undesirable product for this particular purpose.

There are two methods of adapting a matrix to a cavity. It may either be burnished to the cavity in the tooth or swaged to a model. Some operators combine these methods, which insures perfect adaptation. In simple, accessible cavities perfect adaptation of the matrix may be obtained by burnishing; any other method would only complicate the operation and consume time. The possibilities of this method, however, do not end here, for where reasonable skill has been acquired by the operator it can be employed with success almost universally. But there are cavities so complex that swaging the matrix greatly facilitates its adaptation. While I am free to admit that good inlays may be made from models exclusively, I am of the opinion that in the majority of cases better results can be obtained if the matrix is burnished to the cavity subsequent to its swaging. On account of the uncertainty of materials used for impressions and models and also of our manipulation of them, we can not be certain of reproducing absolutely the form of any cavity. I therefore deem it advisable to refer the matrix to the cavity in the tooth for correction by burnishing after it has been swaged to the model. I would advise that the operator acquire a thorough knowledge of matrix materials and the manipulation of them in a cavity and avoid wherever possible that time-consumer—the swaging process.

Time will not permit me to detail in full the technique of burnishing and swaging matrices. I will mention only a few of the more important points. The matrix should first be carried to the pulpal walls, burnishing it from this point in all directions to the enamel margins and slightly beyond. During this process the metal should be protected from contact with the burnisher by the use of such materials as moist cotton or punk. If a thin matrix be placed between two layers of silk of a very fine texture, its adaptation may be accomplished with the minimum danger of tearing. The originator of this device is a European dentist whose name I do not recollect. Chemically pure gum camphor not only aids adaptation under the burnisher, but where a thin matrix has been used it avoids any possibility of distortion while the matrix is being removed from the cavity. It can subsequently be burned out without leaving any ash. The utmost care must be taken to make certain that the gingival angles of the matrix are in the closest possible relation to the margin of the cavity, as these are vulnerable points. Too often it is thought that the cement will take care of any imperfection in matrix adaptation. This has been a refuge for careless inlay workers and has given the work an undue ridicule. The technique for the swaging of a matrix involves the consideration of the materials used for impressions and models. For an impression material hard modeling compound and cement are used and both give good results. I prefer the use of the former, as it is cleaner, more easily used, and sets sufficiently hard to give an accurate impression. For models, low-fusing metals of different kinds, cement and amalgam have been used. The low-fusing metals are faulty on account of their inability to assume sharp angles. Cement has given fairly good results, but in cases of thin-walled cavities its edge strength is not always sufficient. Amalgam, on account of its strength and its property of reproducing sharp lines and angles, is preferable to other materials. Models, no mattter of what material, should include a small area at least of the tooth surface surrounding the cavity. This permits of an overlapping of the margins by the matrix. Before the matrix is swaged it should be partially adapted at least to the deeper portions of the cavity in the model by the use of burnishers. It is then subjected to one of the many swaging devices. If a swaged matrix is to be burnished in the tooth, it is well to reinforce with gold solder that area of it covering the pulpal walls of the cavity. This reinforcement is specially indicated in large cavities where a thin matrix has been used. This insures greater certainty of marginal adaptation.

One cannot attend clinics or read much of the present-day dental literature without being strongly impressed with the variety of methods in vogue for the making of gold inlays. While progression is always associated with liberality, yet it is not wise to allow the practice of many methods to hamper the perfection of a few rational ones. The common practice has been to make a solid inlay, building the solder to the desired contour and tooth form. With the object of insuring greater certainty of contour and occlusion, and for certain other reasons, an inlay made in two sections, and improperly called a "hollow" inlay, has been devised. The advantages claimed for this inlay are in its method of construction. The form of the inlay necessary for occlusion and contact may be obtained from a carving of a suitable material reproduced in gold plate, subsequently fitted and soldered to the matrix. To give it stability, the space between the matrix and the plate of metal forming the outer surface of the inlay is partially filled with gold solder through an opening in the former. This opening in the matrix and the space within lends a mechanical attachment to the cement when mounted in the cavity. The bulk of cement is sufficient to overcome any thermal shock to the pulp, which in some cases it is necessary to consider. Notwithstanding these advantages, failure has attended many of these inlays even when carefully made, by reason of holes being worn in their occlusal surfaces. This is due to the air in the space preventing uniform flowing of the solder. Its construction is complicated and requires more time than that of the solid inlay. The solid inlay has been considered difficult of construction, as there is no guide to form in the technique, other than the operator's eye. While this may be, in a measure, true, its advantages of strength and hardness are so manifest that this objection is of little consideration to one skilled in the use of the blowpipe. It is not the intention of the writer to ignore all methods of inlay construction other than those just mentioned. There are so many other styles of inlays that the time will not permit of their consideration here. All other methods, however, are merely modifications of the ones we have described. There are many schemes of making inlays, claiming the advantage of being easy methods and time-savers, that are so lacking in the fundamental principles of inlay construction and so inviting of failure that they should be discouraged in every possible manner.

It is so difficult to present the technique of soldering an inlay without an actual demonstration that only a few of the more important details will be referred to. The matrix should invariably be invested and heated over a Bunsen flame while the solder is being added. A 22-karat gold solder is preferable on account of its surface being less liable to become tarnished than the lower grades by the fluids of the mouth, and also on account of its nicer working qualities. A clean, saturated solution of borax should be used sparingly. In a proximo-occlusal cavity, for instance, the soldering should be commenced on the approximal surface, building it out to the contour that is required. After the first few pieces of solder have been flowed the remaining solder is incorporated by a process of sweating. The pieces of solder may be so shaped and arranged as to give us any desired form. Care should be taken to avoid overheating, causing a settling of the mass of solder toward the cervical portion of the matrix, destroying the contour. When the approximal surface has been restored it will be found that the occlusal surface will require the addition of only a small amount of solder unless the restoration of cusps is demanded. These are then restored as required. A delicate operation with the blowpipe may now be brought into use, by allowing the flame so to play upon the solder that a smooth and uniform surface is obtained without in any way disturbing the form of the mass. The common mistake of overfilling the occlusal and cervical portions of the matrix may be avoided by a proper control of the heat and the arrangement of the solder. If the soldering has been carefully done, very little polishing will be required. Care must be taken to accurately dress and polish the cervical margin before the inlay is cemented in the cavity, while the other margins may be burnished and finally polished later.

Special inlay cement of dark brown color, on account of texture and strength, should be used for cementing these inlays. The cavity surface of the inlay should be grooved to offer a mechanical attachment to the cement. While cementing an inlay in the cavity it is necessary to force out all excess cement. To do this, it should be slightly unseated where possible and then forced again to place and retained there by steady pressure until the cement has crystallized. During the crystallization the margins should be thoroughly burnished to the tooth. This will enable the operator to ascertain whether or not the inlay is properly seated in the cavity. After the cement is thoroughly crystallized the margins of the inlay should be finally polished to the enamel margins.

If any one thing more than another has retarded the adoption of the inlay principle, it has been the fear aroused regarding the dissolution of cement. Clinical experience with the use of cement for filling teeth no doubt accounts, in a large measure, for this belief. The failure of the cement filling may be attributed to attrition together with solution. The inlay allows but little opportunity for attrition to affect the cement underneath it. The cement change, then, must be due to solution. There has been much speculation and some investigation concerning this problem, and still much remains to be known. The chemistry of solution naturally belongs to the chemist. Observation has taught us, however, that a large cement filling will "wash out" more rapidly than a smaller one, even where attrition plays no part. This is an object lesson to be applied to inlays. A gold inlay can be made to fit a cavity so perfectly that no cement line is visible to the eye and this is the operator's strongest fortification against cement dissolution. While it is astonishing, at times, how well an ill-fitting inlay will preserve tooth tissue, it is, I believe, due more to the immune conditions in the mouth than to any virtue of the inlay; and to rely upon such inlays for saving teeth would be dangerous. Since we do not know to what extent the dissolution of cement will proceed, the safer practice would be to so make inlays that when mounted in the cavity there will be a minimum amount of cement between inlay and tooth. Another consideration which would tend to preclude the possibility of cement solution is the proper mixing of it. The general tendency is to use an excess of phosphoric acid with the view of affording ample time and ease for the operation of setting the inlay. This is a mistake. The cement should be mixed to the thickest consistency that will admit of its use for this purpose. Even beneath perfect-fitting inlays properly manipulated cement will show evidence of a slight solution, but our experience to the present time would not warrant condemnation on that account. Furthermore, the most persistent objection to the inlay on account of cement dissolution has come, not from clinical experience, not from men reasonably skilled in inlaying teeth, but from "doubting Thomases" who have stood afar off and cried, "Not until I see will I believe."

REPORT OF DR. TAGGART'S NEW PROCESS OF MAKING GOLD INLAYS, ETC.

BY DR. HART J. GOSLEE, CHICAGO.

PROCEEDINGS OF THE CHICAGO-ODONTOGRAPHIC SOCIETY, JANUARY 18, 1907.

The chair desires to ask the indulgence of the members for a few minutes to recall to your minds the remarks made by our confrere, Dr. Taggart, to this society at its November meeting with regard to a new process of constructing gold inlays which he had developed, and, if it is your pleasure, to make a public announcement of that process to you.

First, however, I want to say that I am acting entirely without authority from Dr. Taggart, and yet I believe that he is close enough to the members of the Chicago-Odontographic Society for me to venture to tell you of the reception which he received Tuesday night, January 15, before the Odontological Society of New York City on the occasion of the first presentation of his method. He promised he would tell you as soon as he could just exactly what he had done, and if he were here tonight I am sure he would be happy to do it. I fancy, however, that he would probably begin by making an apology to the members of the Chicago-Odontographic Society for not having first given them this process, but, by way of explanation, I might add that he was invited two years ago to read a paper before that society, and declined because he felt he did not have anything sufficiently new or interesting to go that far to present, and so he did not go. Last year he was again invited and because of the invitation being extended a second time by the same society, he felt that he had to accept, and afterward that he must then do something to make good. He therefore accepted the invitation and at once set about to do something which would be worthy of the occasion.

And, gentlemen, as I said before the Odontological Society of New York City in opening the discussion on his paper, I believe that Dr. Taggart has, by the development of this process, accomplished something which is destined to mark the dawn of a new era in dentistry. I believe he has completely revolutionized the filling of teeth with gold by the inlay method.

Some of you may possibly think this a radical statement, and, indeed, my friend Dr. Johnson said to me, after I had described the process to him: "Goslee it sounds good, but because of your friendship for Taggart, are you not a little too enthusiastic?" I can assure you I do not feel that I am, and that I would think just as much of the method if I never heard of Taggart. Therefore, after this explanation, I am going to tell you what the process is in order that a report of it may go into the records of our proceedings.

Dr. Taggart's work has been along the lines of *casting* gold. Of course such an idea is not new. The late Dr. William H. Atkinson, twenty-five years ago, worked for years in trying to cast gold, but without success, and finally, becoming discouraged, he abandoned it. Many others, including Carroll, Zeller and R. C. Brophy, have worked along the line of casting aluminum for years, but Dr. Taggart has devised a method not only for casting gold, but for casting any metal which can be fused with a small oxhydrogen blowpipe, and in a mold of investment material, with a reasonable degree of absolute certainty. I will describe the method to you and you will readily see that it is not only applicable to inlay work, but also to plate, crown and bridge work and therefore practically unlimited in its application.

After the preparation of the cavity has been carried to the proper point for an inlay he makes one of wax. The form of wax used is no secret. He tells you its composition and that it is filtered thoroughly so that there is absolutely no foreign substance in it. He first rolls up a ball of this wax, works it over the burner until it assumes the proper plasticity, coats the cavity with liquid vaseline and then packs the wax down into it and has the patient bite. As soon as the patient has closed the teeth firmly together he then unseats the wax with a pointed instrument and has the patient bite again, thus forcing it back into place. He then chills it with cold water, removes it and trims it down to the desired form of the filling, thus making a wax filling. This is really all which the process actually demands. If we can fill teeth with wax, or make any form which we can get into the flasks—if we can first make these in *wax,* we can then reproduce them in gold.

After he has finished the wax filling, contoured and carved it and done everything to be desired in a permanent gold filling, he chills it and removes it from the cavity. He now takes the filling in his fingers, picks up a piece of wire to be used as a *sprue,* holds one end over a Bunsen burner, warms it up, and sticks it into the center of the wax filling. We now have this wax filling anchored to the end of this wire or sprue. He then mixes a small amount of investment material, which is finely pulverized, and with a pointed instrument packs it carefully around the wax filling.

If he were to attempt to cover it entirely with investment material by jolting it down, as cases are ordinarily flasked, he says he would simply cause a coalescence of ten, twenty, or perhaps a hundred small air bubbles into a large one, and he therefore avoids any jolting, and so, instead of mixing a large quantity of investment material at first, he only mixes a small amount and simply packs this all around the filling, leaving the other end of the sprue exposed, and then places it aside until crystallization has taken place, after which it is invested in a flask.

The flask consists of a heavy brass ring about two inches in diameter, which fits on a base having an elevation in the center, and a small perforation in the center of this elevation.

When crystallized he takes up the partially invested inlay and inserts the exposed end of the sprue into the perforation in the center of the elevation on the base of the flask. He then adjusts the ring to the base and fills in all around the filling with the same investment material. After this is crystallized he turns the flask over and lifts off the base, and then what do we have? We have a depression in the center of the investment material made by the elevation in the center of the base of the flask, and in the bottom of this depression is the end of the sprue which extends down to the wax filling. He now takes a pair of pliers and gently pulls this out, and we then have a crucible, with a channel leading down to the wax filling.

And now here is what Dr. Taggart has accomplished: He has devised a means of making a casting mold, crucible, channel and all, in one piece. Heretofore everyone who has made an effort to cast metals from gold down to tin has felt it necessary to make the mold in two or three sections. To avoid this is the reason wax is used, and when the mold is now placed over a Bunsen burner and the wax melted and burned into the mold, by having pure wax *no residue* is left.

The mold is now heated and then placed in an automatic machine. This machine has three features. It consists of an oxhydrogen flame on one side, a compressed air tank on the other side, and a lever which closes the flask air tight and automatically works both of the other features at the proper time. After heating the flask containing the wax until all of it is burned out and absorbed by the investment material, and the latter becomes thoroughly dry and well heated, he puts it in the machine, takes an ingot of gold, preferably 22-karat plate, and places this in the crucible formed in the top of the investment material, lights the oxhydrogen blowpipe and fuses the gold. He does not stop at the fusing point, but carries it beyond, until it is practically boiling. At this point he comes down on the lever and automatically the oxhydrogen flame is first turned to the side, an abestos packing covers the top of the flask and crucible, and the compressed air is turned on, and very quickly an exact reproduction of the wax, of whatever form it took, is made in gold.

When the filling is cast, which takes but a moment, you open the machine, lift off the flask, throw it into cold water, pull the ingot of gold out, wash it off, saw off the stem of surplus gold, and you have a filling which fits the cavity, whatever shape it may have been, to perfection, and one which requires but little finishing.

The result gives you a more accurate fit to the cavity than it is possible to obtain by burnishing a matrix, and the method also gives you the advantage of making a hollow inlay if you wish, and if the proportions of the cavity will admit, or of making any irregularities in the under surface which you may desire as a means of affording mechanical retention to the cement.

Dr. Taggart gave a clinic in New York City on Tuesday afternoon at the office of Dr. M. L. Rhein, at which he made a large contour filling involving the distal and entire occlusal surfaces of a lower molar in twenty-nine minutes.

I felt it my duty to tell you about this achievement, and I want to say also, in justice to Dr. Taggart, that probably no one has ever gone to New York and created the spontaneous enthusiasm that he did. He was vigorously applauded and heartily congratulated by many of the most distinguished men of that city, and I am pleased that it is my province now and here to give you an idea of what he has done for dentistry (applause).

ROACH'S MOLDABLE PORCELAIN.*

BY J. G. REID, D. D. S., CHICAGO.

The presentation of a paper under the above caption before this society is not new. Your attention having been directed to it on prior occasions. Several members of this body are and have been specially interested for some time as to its merits and application in restoring and bringing into usefulness badly broken down molars and bicuspids; any new method of practice, or introduction of a material to be used by dentists which will be wholly free from the antagonism of commercial taint, ought to, and will, receive a hearty co-operation of the profession at large. Under this brief outline there can be no necessity for withholding long experimental and continued efforts to restore confidence by reasserting what has already been said, and giving affirmation to that which may possibly be in a slight measure new.

I desire and wish it distinctly understood that your writer is not here to advertise inventors, or products of invention, either directly or indirectly, but rather to confine myself to a few brief remarks on principles and practice of saving teeth as applied to the material now under consideration.

The principal thought which prompted me to present this brief paper was suggested in an essay read by Doctor J. D. Patterson before the Alumni Association of the Chicago College of Dental Surgery, subject, "The Gingival Border." In my judgment that paper contains much food for thought, and was timely. The repetition of a few short extracts taken from that paper will well serve the purpose of more firmly re-enforcing the necessity and care of the gingival border. He says: "Study, experience and observation have taught us that the gingival border is long suffering, and in health its dense covering of squamous epithelium makes it impervious to abrasion in the act of mastication; but when irritated and inflamed it becomes extremely sensitive, and when destroyed, cut, severed, severely torn, unduly stretched or strained by continued force, is rarely restored to its normal condition. * * * The future must eliminate so far as possible diseases of this tissue, whether caused by systemic conditions, by lax sanitation or by operative procedures. * * * We often see it stated that in our day a greater number of teeth are lost through diseases of tissues surrounding the tooth than through caries. * * * It is a true one, and if we are confronted with the fact that these diseases have their inception at the gingival border, and do not progress without a loss of function in that border, we at once see how positive is the call upon us to maintain at all hazards the integrity of that tissue. * * *

---

*Read before the Odontological Society of Chicago.

"We now come to this proposition—that *any factor* that produces lesions in the gingival border is causative of deeper injury, and may ultimately result in the exfoliation of the teeth, and that such irritation arises from calcareous deposits and other irritant local conditions almost invariably. Let us now consider the following question: Is gingival irritation, which may result disastrously, ever due to operative procedures? * * * There is, however, one *accepted* operative procedure which originates gingival irritation, and that is the use of bands for crowns and bridge supports. * * * Any procedure which changes the conformation of the tooth at its cervical portion from smooth, anatomical and graceful lines, to irregular and interrupted form, irritates the gingival and invites calcic deposits and gum recession.

"Any observant member of our profession can testify to the destructive results from irritation and calcic deposits following inflammatory conditions from band irritation."

From the foregoing few brief extracts taken from the pen of such an able observer and writer, might to my hearers seem to be an act of presumption on my part to add further evidence of the glaring abuse so frequently observed and the incalculable injury imposed upon the gingival border by the hands of lazy, thoughtless and unscrupulous dentists in the adjustment of gold crowns and bands to the roots of teeth that might well be conserved by other and better methods of operative procedure.

When we actually come to take an invoice of the broken down molars and bicuspids coming under observation from day to day that are carrying crowns of various descriptions, the number would be appalling; and upon further discovery, what is still worse to find that about twenty-five per cent of this goodly number ought never to have been crowned. One of the most noticeable and striking observations to be recorded in the average practice of a conscientious dentist at this time, is the utter absence or neglect in the proper selection of suitable materials for each given case presented.

The trend of practice today seems to me to be pointing to a more general use of inlays; with this in view I am forced to add my testimony to this favorable practice, especially when I have at my command a servant material so tractable as the moldable porcelain.

The time has now fully arrived when we can with implicit confidence give this material a permanent position in the field of operative dentistry. I believe it is conceded that we have been at a great loss for many years in having something at command that would successfully fill in the break between the choice of resorting to cement or amalgam for crowning of teeth in order to further prolong their usefulness; in fact, I may say to avoid crowning altogether if such a thing could be possible.

The introduction of moldable porcelain occupies a position peculiar to itself, and the use of it based upon inlay practice, seems to fully meet the demands and requirements when used under its special indications. Whatever may have been written or said upon this subject heretofore, could not be recorded with the same degree of confidence as can be expressed at this writing. Many of the perplexing difficulties formerly encountered in the molding and baking of this product has been uniformly overcome, as it is now in such a state of perfection that anyone possessed of reasonable skill can with a little practice become successful in its use.

INDICATIONS FOR USE.

Moldable porcelain is an opaque substance—this factor in a measure will for the present at least preclude its use in conspicuous localities, and yet if you will allow indulgence in fastidious comparisons, we will find large amalgam fillings occupying positions of prominence in mouths of patients every day, which could be vastly improved if substituted with moldable porcelain. The chief indications for the use of this product lies in the direction of large restorations of molars and biscuspids. "The words restoration is used to differentiate distinctively between a filling having three or more walls, and a filling having one, two or three walls, or no walls at all. It is these restorations where this material has its most especial indication for use, and where its use may eliminate the necessity for the crown with a cope or band." When used under the indications just outlined, I can say without undue exaggeration that 50 per cent of the crowns can be netirely dispensed with. What an advanced step this is toward the preservation of the gingival border. I could with propriety mention many other indications where this product can be used with equal advantage, but will allow the discussion to supply the remaining features.

CAVITY PREPARATION.

Some thoughts on cavity preparation will be culled from a paper presented and read before the state society last May by Dr. E. J. Perry. I regard this part of the paper as one of special merit, and if wider circulation could be given it, and its precepts carefully adhered to, better dentistry would be furnished to the public by the laity.

"Cavity preparation in this work is not entirely distinct from the same for inlay work in general. * * * Cavity forming must have a definite principle underlying it. When the decay is all removed so that the operator can survey the cavity walls as left by the caries, he can then plan his cavity form from what there is of solid tooth structure left standing. First, his cavity form must be so that it will draw, that an accurate impression may be taken of its form. Undercuts must be beveled up with cement, or cut away, so that the impression will draw; if this is not done it is not possible to obtain an accurate model. * * * In the large restorations, even though the walls may be fairly strong it is well to cut them down a half or more, especially if the pulp is dead. * * * It is also best for the reason that the line of union or joint between the inlay and the cavity-margin does not come in a place where the abrasion of mastication will fracture or chip the porcelain or the cavity-margin. * * * The line of juncture crossing the grinding surface of the tooth must not in no case be at the summit of a cusp. The general form of the cavity should be built on straight lines and angles, and not in curves. * * * Cavity forming must be scientific in extending the margins to a safe or safer area, and on mechanical principles, in that it is box-like in form. * * * This pulp chamber box is the anchor for the crown."

If at any time a doubt be raised as to the retentive security of the box-shaped cavity, additional security can be had by inserting a post of platino-iridium, suitable in size into the root canal; with the precaution that it be left free enough to come out of the canal with the impression.

The instruments to be employed in the preparation of cavities for large restorations must in a measure be left to the taste of each respective operator. However, in my hands I find the small stones of various shapes most suitable, and in addition thereto cone shaped finishing burs a great aid. Now with a feeling that the home for our inlay has been constructed in the best possible manner, the next most important step is to obtain an accurate impression. This can best be done (in my hands) with what is known as "Detroit Modeling Compound." This material, when properly softened with dry heat and transferred promptly to the cavity—pressed gently and firmly to place and allowed to cool sufficiently to prevent any change of form in withdrawing it from the cavity—upon removal will be found that an accurate duplicate of the cavity has been made. Always bear in mind that taking impressions of cavities is by no means an easy task to accomplish, and therefore greater is the necessity of being self-satisfied with this part of the work, as failure in the proper observation of details in taking impressions will surely bring disappointment to you in the final adjustment of your inlay. Having a good impression, the next step is to imbed it—impression side up in plaster to a depth sufficient to insure a shallow box, the object of which is to confine the copper amalgam. The amalgam after being brought to a proper state of plasticity, is packed into the impression carefully, using small pieces so that the margins of the cavity will be fully and sharply outlined on the amalgam when fully hardened. In case the operator desires to hasten the work, much time can be saved by substituting "White's Inlay Metal" in making a model. This metal when melted can be poured directly into the modeling compound impression and a fairly accurate working model obtained. Your writer believes, however, that for general accurate results, much better defined margins and outlines of the cavity can be secured by the use of copper amalgam; the great danger encountered in using the inlay metal is that the margins of the cavity model are likely to appear rounded instead of being sharp and square. It is well not to forget the wax-bite, the object of which is to furnish a plaster model of the opposing teeth, which serves the purpose of a guide to the occlusion when carving the porcelain.

With the occluding model properly made we are now ready for the molding process. This part of the mork is quite similar to the mixing of cement, with the exception that the adding of the powder to the liquid is continued to the point of obtaining a mass equal to the consistency of putty; this putty-like mass is taken from the slab and rolled between the thumb and fingers long enough to remove any folds or air spaces that may be present. At this point the cone shaped mass may be dipped into the surplus powder remaining on the slab, and at once transferred to the previously oiled model and pressed to position, after which the reverse side of the articulation must be placed on so as to obtain the marks of the opposing tooth, which, as previously stated, will serve as a guide to the carving which follows.

When the mass has set, which will be in about ten minutes, it is gently and carefully removed from the cavity-model and then replaced, after which with the sharp blade of a penknife you commence to do the carving, and this is carried on with a view of simply restoring the tooth to its proper contour minus whatever changes the occluding tooth makes necessary. Having completed the carving, the inlay is placed cavity side down in a bed of powdered silex and placed in the furnace, allowing a little time to dry before completing the bake. This porcelain fuses at about 2,000 degrees heat, in fact, the product is not endangered if carried to a higher heat. Moldable porcelain when properly baked will come from the furnace slightly glazed, and the first bake will show slight shrinkage. If the bake comes from the furnace showing a purplish tinge, this is evidence that the mass is underbaked, the proper color being a light yellow. "After the first bake the inlay is set into the model and it will be seen to have shrunk as formerly stated and a refit is necessary." "The model is oiled as before and the mix is made as before." With a small spatula the mix is placed on the cavity surface of the inlay, care being taken to put it upon the margins. The inlay is pressed into the model and treated as before. When set the margin carrying the surplus is trimmed off and the inlay baked as before. Two bakes will usually be all that is necessary if details have been closely observed. When the final bake is made, the inlay is then ready for the surface polishing, which is done by means of fine stones and finishing with carborundum and cuttlefish disks.

The setting of the inlay in nowise differs from the setting of other inlays, with the one exception that the moldable porcelain does not require any etching.

In conclusion permit me to say that I have intentionally omitted many good things in this paper that could be said about moldable porcelain; this intentional omission is for the purpose of giving those who follow in the discussion an opportunity to add something to this most interesting subject. When the discussions are closed and the final results fully noted thereon, I am sure you will go from this place of meeting with a feeling that it is blessed to be called a member of the Odontological Society.

A FEW POINTS FOR RETENTION.*

BY ENOS J. PERRY, D. D. S., CHICAGO.

Now that vacations are over, and our work has begun again, some thought might be recorded with inspiration if not with benefit, some home-circle words, words that are not for the general ear, When we sit at the dinner table with our loved ones, the day's work done and its events have passed into written or unwritten history, we sum up the experiences, and as our hearts stand open in the sacred family circle, we give voice to our truest and best thoughts. The meanest hypocrite will not show his false face here. If true anywhere, he is true here. This is home. The smiles, the tears, the joys, the sorrows, here are too sweetly sacred for the world outside. So we, as members of the Odontological Society, with a constitutional limit to our membership, meeting each month around the festal board, have more than the common fraternal tie holding us. We have grown into a closer brotherhood. We have come to be friends in a higher sense still. So we can say things to each other without fear, without reserve.

We can here voice our best and truest thoughts.

It seems to me that our work ought to be better this next year, for two brief reasons. First—The profession expects it of us. Second—Better work is the only thing which will hold our membership together. Nothing succeeds without hard work. No lazy man is happy. Better work in this society is indispensible to its life.

---

*Read before the Odontological Society of Chicago, October, 1906.

This Odontological Society has given the profession some of the best it has. Our proceedings are read by thousands, and our papers and discussions are looked for by hundreds everywhere. But we must keep up the pace set in years gone by, and not lag. We have the men, men with the knowledge and experience. I say as a society we are not working hard enough.

The program committee should notify the members at least a year in advance. A paper should be at least six meetings in time in preparation. The members themselves should keep tab on their turn and be ever on the alert for material. Some branch or some distinctive feature of practice should be under special study about all the time, and the collateral study and reading always pointing toward this paper. What a source of reliable knowledge we would be with our whole membership at work on different subjects. Is not a reform needed in this matter?

Growth. Most of us are men who are a little past the meridian of life, so far at least as years go, and a thought has slipped into my mind in this connection about growth.

I have been pained to notice laxity in many men, not members here. Though the fact may be of value to us, and a self-examination if entirely honest put us on our guard against the evil of relaxing our energy and living in the past. I see so many good men quit running when the race is half run. They seem to lack that indefinable thing known as class. They start well, and when the midday of life has come, with its inevitable disappointments, they quit and seem to say, "Oh, well, what's the use?" These men spend much time talking about the past—they have beat the barrier or got a flying start, then lacked the stamina to stay. They stood for all that was good, for growth, advancement, higher ideals, until by dint of industry some one has come up to them. They fell back in the ruck and are known in racing vernacular as "also rans."

Growth has many forms and, like success, it must be defined. And here the simile of the race loses its application, for the reason that in the race of life *all* may win. Growth professionally has still a different meaning. It brings as its fruit impulse, zest, energy, love, all the attributes of professionalism. This growth, if symmetrical, makes its imprint in every line of the face and in the very gait of the man. Success in getting practice, making money, having a fine office, moving in "society," getting large fees, operating and conducting a large business may be a part of professional growth, but it is not it. A man may have all these qualities, and succeed to the highest pinnacle of fame in the eyes of the laity, and still not grow professionally.

The man who is growing professionally is ever holding up to the breezes of fame the banner of character, ever striving to put character above reputation, truth beyond every consideration, and love as the moving active impulse of his life. If the chief end of man is to glorify God, then it is not alone to make money; it is not to get a reputation. The man who serves man best serves God best. The man whom God loves *most* is the man who loves man most.

Therefore, one evidence of growth is our loss of hatred and our gain of love. Another evidence is our zest for work, our zeal and patience, our industry, attendance upon dental meetings, our interest in theory and practice, our strength. In these times when money seem to some to outweigh character, when the rich are often so profligate, where graft seems to rule, there goes up all over our blessed country the Macedonian cry, and the demand for men who place character above wealth is great. This has its counterpart to some degree in our own little country—the profession.

I say we need more reliable professional men, men who will hold up the banner of professional manhood, men who seek for truth for the sake of truth, men who seek for true happiness where it is to be found, namely, in true growth.

OBSERVATIONS ON THE RETENTION OF PULPLESS TEETH IN THE JAWS, WITH INDICATIONS FOR THEIR REMOVAL.*

BY A. W. HARLAN, M. D., D. D. S., NEW YORK CITY, N. Y.

Pulpless teeth may, by their presence in the jaws, give rise to many ills. During the thirty years I have been in practice I have had opportunity to make many personal observations on the retention of pulpless teeth. It is a necessity to retain many pulpless teeth in the jaws for cosmetic reasons, i. e. for the support of crowns and bridges, but such teeth, when causing constant pain and distress to the possessors, should be sacrificed.

---

*Read before the American Dental Society of Europe.

TEETH WHICH MAY BE RETAINED.

Such teeth as those having roots more or less regular in their outline should be retained when it is possible to fill the roots, approximately, to their apices. Teeth of normal shape having recently been deprived of their pulps should be retained in the mouth; this will include those teeth whose pulps have been removed to divert nutrition to the pericementum, as in acute cases of pyorrhea alveolaris. Some teeth may be retained even when one root has been amputated to cure an abscess, or to remove the necrosed apex of the root, to prevent destruction of the socket.

I

A pulpless tooth, if it does not often give rise to occasional neuralgias, should be retained. Pulpless teeth, even when their roots are covered with areas of hypercemental growths, may be retained in the mouth, if there are good antagonists to give them exercise. It is my opinion that a pulpless tooth with a normal root may be allowed to remain in its socket, even though an abscess may have been discharging through a fistula for several years, if the patient is robust and is not suffering from some constitutional disorder that would prevent healing of the abscess.

Pulpless teeth may remain in the mouth even after the deposition of salivary or serumal calculus on the roots of a tooth, provided the deposits are removed and the teeth are held firmly in their sockets by splints or other mechanical devices. It is very necessary, however, that all deposits should be removed from the roots and irritating margins of necrosed bone should be scraped away.

2

A tooth having a mummified pulp, if the root is reasonably straight, should be retained after the *mummy* is removed and the root filled. Pulpless teeth having perforated roots, from misdirection of drills and burs, may be retained if such perforations are filled with paraffin or with some other approved material, lead, gutta-percha or creosoted wood.

Pulpless teeth, with encysted apices, may be retained indefinitely in the mouth provided the roots are well filled and such teeth have good opponents.

It may be advisable to retain a pulpless tooth, at times, even though useless and discharging pus through the gums, until the eruption of an adjacent tooth to prevent an irregularity.

Anchylosed pulpless teeth, when not causing pain or any disfigurement, should be retained in the mouth.

All pulpless teeth not having hopelessly incurable abscesses may be retained, and discolored teeth may be cut off and crowns adjusted provided the roots are well filled.

TEETH THAT SHOULD NOT BE RETAINED.

Teeth with split roots, impossible of perfect apposition of the parts; nearly all teeth where the roots are split one-third to one-half their length should be removed, with few exceptions.

3

All teeth having no exercise or antagonism are useless. When devitalized, they may serve a temporary purpose, but many neuralgias are due to their presence. Teeth with deposits reaching to the apices, and covering them in many cases, are unfit to be retained in the mouth. There is not the slightest ground for the belief that the pericementum or periosteum will become reattached to such roots. The pockets are constantly filled with decaying and decomposed food, blood, mucus and other debris.

Teeth with irregular, twisted and compressed roots, impossible to fill with any known material, should be removed. Caries or necrosis of a socket containing a pulpless tooth should be sufficient

4

5

cause for its removal. Malformed molars that are pulpless, impossible of being rendered useful for mastication, should be removed.

Pulpless deciduous teeth which prevent the emergence of the successors are useless and should not be retained in their sockets. The indications for the removal of pulpless teeth are a recognition of their total uselessness and the impossibility of restoring their functions.

All those teeth which are impossible of being used for retention of crowns, bridges or artificial teeth should be removed. A tooth with a denuded and discolored crown and root is an offense to the eye and should be replaced with something more in keeping with its surroundings.

6-7

No pulpless tooth or root should be retained in the jaw when it gives rise to continual pain in the eye, ear, side of the face, neck or shoulder. Any pulpless tooth which discharges into the antrum as a rule should be extracted; pulpless teeth having abscesses attached to their apices, discharging on the face, in the nose or through the hard palate after surgical intervention should be extracted. Pulpless teeth, with extruded malformed crowns in any portion of the mouth, unless the roots can be used for crowns, plates or bridges, should be extracted. Many teeth, even after the amputation of a root, are useless because the new growths taking place around the amputated stump fail to fill in the root space, and the food lurking in such spaces decomposes, rendering the pockets foul and nauseating.

I will give you a few pictures of pulpless teeth, having deposits on the roots, necrosed roots, amputated roots and twisted roots, all of which were extracted to relieve painful and persistent neuralgias, either direct or reflex:

1. Necrosis and deposits.
2. Deposits covering the apices.
3. Serumal calculus around the apex and in bifurcation.
4. Necrosed roots.
5. Amputated roots.
6. Twisted roots.
7. Impossible to fill such roots.

THE CONSERVATION OF THE BICUSPIDS.*

BY WM. HIRSCHFELD, D. D. S., PARIS, FRANCE.

Mr. President and Gentlemen—It would not be surprising if your first thought has been—in reading the title of this paper: What can possibly be interesting to us in it—unless the essayist has got something actually new to tell us? And if that is not the case, does the writer not realize that he speaks to men of long experience?

Gentlemen, not only did I not forget that I am addressing myself to a body of eminent operators, but, on the contrary, the reason for bringing up this old subject before you is to find out if perhaps someone, just on account of his personal experience, has something to suggest which might greatly change old standard principles. The fact is that whatsoever we learn in college is bound to undergo strong modifications through the influence of something much more powerful than school, namely, through the experience of our practical work. Therefore it does not appear at all out of place to discuss from time to time before a professional society, what may be rightly called the A B C of dentistry. Those discussions nearly always reveal new facts, liable to modify profoundly current methods of operating. Of such subjects I hardly can think of a more difficult one than the proper treatment of the bicuspids. Their conservation demands from us more skill, more judgment, more consciencîousness than the rest of the dentition. To fill bicuspids successfully means to overcome difficulties which partly do not exist with the other teeth. These difficulties which the busy dentist has to face continually in daily practice may be well classified under the following four headings:

---

*Read before the American Dental Society of Europe.

1. The crowded position of the bicuspids, thus preventing the operator from handling freely his instruments.

2. The difficulty to preserve their cervical border from recurrence of decay.

3. Their anatomical shape, thus affording but limited anchorage to a filling.

4. The absence of a filling material suitable for all cases.

The difficulty to overcome the crowded position of the bicuspids is the great peculiarity of those cases of beginning decay which only can be diagnosed by probe or discoloration. For this class of cavities, unless we have to work on exceptionally weak teeth, non-cohesive gold should be employed exclusively. But how are we to get our gold in place where there is generally little space? As a separating by filling necessarily produces alteration of the shape of the tooth, as wedging takes no end of time and is followed by great soreness, there remains only one possibility to do our work to satisfaction and that is: The establishment of a triangular operating field between the teeth.

Dr. Black's principle—extension for prevention—cannot be better employed than in these cases of crowded bicuspids. We should never hesitate to sacrifice part of the occlusal surface of one of the affected teeth in order to get light and space. This slight sacrifice is so easy to mend by proper contouring that no dentist should endeavor to preserve this part of the tooth. Frequently nature forces us even to cut down these sometimes thin walls. However, where this is not the case it should be the distal part of the first bicuspid to be opened, as in that way we throw a direct light on both cavities, and on the other hand our restoration with gold will be less objectionable. These cases of beginning decay, which I feel tempted to call "preliminary decay," are unfortunately only the smaller proportion of our tasks. Mostly it is with larger defects that we have to deal; and with the filling of these cavities continually more mistakes, if not crimes, are committed than with all other teeth of the mouth. These faulty operations are generally the consequence of an unsuiable filling material chosen by the dentist, who obeys thereby reasons which are in straight contradiction with the welfare of the tooth. The question of money, the difficulty of the work, the objection to the looks of gold, the capacity of the patient to bear pain, if not worse considerations, are the predominant factors in the choice of the filling material, which is supposed to answer first these questions rather than a definite saving of the tooth. And still—if you will kindly follow me for a moment into a closer investigation—you will see that the right treatment of bicuspid cavities depends merely on the faithful observation of those conditions which every single case will positively dictate to us. I feel almost inclined to compare the correct filling of a bicuspid to the cure which a physician undertakes according to the special symptoms of a disease. What applies to physicians applies equally well to dentists; a decayed bicuspid presents in each case certain symptoms which should become our guide for the treatment of the defect. These symptoms may be observed from the following standpoints:

A. Has the decay reached the gum region, so as to let the cervical margin come into contact with the gums?

B. Are both sides of the tooth attacked to the extent of bringing the two cavities near each other at the occlusal surface?

C. Is the pulp alive or dead?

D. Does our personal skill allow us to make such larger contour gold fillings with certain promise of success?

A diagnosis made after these principles will clearly point out to us what kind of filling material to choose in every case.

Naturally the first thing to think of will always remain gold, but gold, as perfect as it may appear, has so many disadvantages that its employment should be limited to: Cavities with sufficiently strong walls; if both sides of the tooth are decayed, one of the cavities should not involve the masticating surface; the cervical border of the cavity, if below the gum line, must not come into contact with pure gold, and with all that the operator must know that he can absolutely depend on his work.

Gentlemen, these are a good many restrictions for the use of gold in filling bicupsids, but you, the men of long experience, must agree with me that nearly all failures in that line are the consequence of neglect of either one or all of these conditions. I remind you first of the apparently faultless work which patients so often come to us for repair. A large percentage of these beautiful contours are nearly always lacking at the cervical margin. And why? Because the operator has not taken care to avoid the contact of pure gold with this treacherous spot. There is no doubt that Dr. Abbott's theory to line the cervical margin with tin or tin and gold is excellent to hinder bicuspids there from secondary decay; but how few men do their work after such true principles! and suppose even they would have employed tin, their work may fail for another reason, namely, the preparation of this part of the cavity. There I frankly admit that I also have been faulty in the past many a time. When I studied operative dentistry in Philadelphia some twenty-five years ago, I was told to prepare my cavity either with retaining pits in the direction of the root or with a retaining groove right along the cervical border. Today I know that such practice is bound to compromise the most beautiful contour work, as those retaining holes or grooves will necessarily leave parts of the enamel bare of dentine and thus give way to future decay at these weak, unprotected spots. It was about ten years ago that my old friend Professor Sachs called my attention to this kind of malpractice. Sachs, instead of using the cervical margin as a retainer, takes great pains in shaping this portion to a healthy, smooth surface slightly beveled toward the gums. In that way the gold or tin can be burnished tight around the cervical portion of the tooth and prevent fresh decay from starting there. It is also Sachs who emphasizes another point of importance: never let cohesive gold touch the tooth, but build up your contour on a frame of soft gold covering well all the cavity walls. The advantage of this theory was described again lately by Dr. H. Herbert Johnson, of Macon, Ga. In his very clear and original paper on the use of malleted gold, which I recommend everybody to read over in last June's *Cosmos,* the writer compares the dentine of the tooth to true ivory possessing a considerable degree of elasticity. Now, let the tooth come in contact with cohesive gold, let this gold be hammered on, then the effect produced by the shock of the mallet will be precisely the same as by the shock of two billiard balls; the foil after a few strokes of the mallet will not adapt itself to the tooth, but, on the contrary, will have a tendency to get away. And in his conclusion Dr. Johnson speaks warmly in favor of the old reliable positive pressure with soft gold to the tooth walls; with the faithful observation of such principles undoubtedly good results with gold may be obtained. But there is another thing seriously to be considered: the frequent loss of the bicuspids is brought on not so much through faulty workmanship as through the lack of judgment in regard to the capacity of the tooth to hold gold fillings. And this question concerns the anatomical shape of this class of teeth: we must always remember that bicuspids are not round teeth, but of a flattened oval shape, having their weak point right at the center of the occlusal surface, viz., at a point which all the power of mastication is concentrated on.

Therefore it should be our great preoccupation in filling proximal defects of bicuspids to strengthen this part and not to weaken it for the requirements of a gold filling. Now if you will look in mind over your records of daily practice you will recollect the large amount of bicuspids lost by splitting at this very spot. Nearly all of these accidents were unquestionably due not by any means to gold fillings badly made, but to weakening of the tooth itself in order to make such gold fillings remain in place. The moment you attempt to fill up with gold the two sides of a badly decayed bicuspid so that there is nothing but a kind of thin bridge of dentine left between the two fillings, you open the door to a possible breaking of the entire tooth, whose resistance for chewing is lessened, instead of strengthened. This regards especially pulpless teeth, as here the comparatively small amount of tooth left will be weakened yet by the brittleness of the dentine. Let us therefore in such cases judge first if the remainder of the tooth—no mater if the pulp is alive or not—will be in proportion to the amount of gold to be inserted. This point, added to really strong walls, to protection of the pulp against thermal shocks, to a sufficient personal routine, will certainly bring on the desired results with gold. So at least we will reason on our side. However, there is quite a different side to be considered, and that means our patient.

Gentlemen, to make with gold large or even medium-sized contour fillings cannot be done without causing a great deal of pain and annoyance to the patient, and not all will stand that. When our professors in their valedictory address exhort us to do our work in the future strictly after those principles as we have learned them in college, they should add: provided you are going to practice in America! The fact is—and here let me appeal to you, the representatives of all parts of Europe—we must draw a line between American and European patients, or, if you like better, between the Anglo-Saxon and Latin races. If American dentistry has reached its high reputation is it alone on account of an exceptional skill on the part of the American operators? No doubt this is true to a large extent; but another great reason is this: The American operator has to deal with a class of patients unique in the world. Their patients come to them with the positive desire to have their teeth attended to, no matter how long, how painful the operation may be. Here, in Europe, particularly with the descendants of the Latin race, the demand is different; our French patients, for instance, consult us with the idea fixed in their mind to have their teeth filled, not after the most reliable way, but after the most painless method. And this desire to avoid pain will increase in direct proportion to the wealth of the patient. The French patients of the upper ten or even upper hundred will not stand the pain or the wear in connection with larger contour gold fillings. They may admit that such work is beautifully done, but they will leave you and go to the dentist who does this work perhaps less well but at least without pain. Now the question naturally comes up:

Is that man necessarily to be considered as a bad dentist? In all sincerity, no, because in the first place his patients will not dread to go to him at regular intervals, and, on the other hand, if he fills teeth conscientiously with materials requiring less painful excavating and finishing than gold, he may be able to preserve with his work his patients' teeth in the end; under such conditions we dentists in Europe have to consider filling materials to take the place of gold even where gold may be indicated.

If we look over these materials in a short glance we notice: Cement, gutta-percha, amalgam, porcelain.

None of these fillings employed alone can replace gold, but by certain combinations the desired result can be obtained. It remains with our judgment to combine several of these materials in a way to counteract the fault of one by the advantage of another.

To use cement or gutta-percha alone to restore large portions of decayed bicuspids is certainly not advisable. Cement possesses first of all the same great fault as gold: it does not keep friendship with the cervical border and the protection of this dangerous part by something more resistant imposes itself. For a number of years I have been in the habit of lining the cervical border with gutta-percha, but finally have given the preference to a basis of amalgam. This leaves a solid foundation for the cement filling which can be replaced at regular intervals without diminishing the tooth in itself.

Such kind of cement fillings will be indicated in soft teeth; in children's teeth, with patients who will not stand long operations, and with badly broken teeth. Amalgam, however, with all its faults, may be preferred in a great many of these cases—but under the strict condition to be lined with cement underneath. Large bicuspid cavities, especially in pulpless teeth, will remain permanently safe if done after this method; they hardly ever turn dark; their cervical margin will not decay further and they will not shrink. Let me recommend to restore lost contours by amalgam over cement, the use of those thin steel rings suggested by Dr. Bryan. With their use you can build up the tooth beautifully to its natural shape, especially if you take pains to leave the band on for the next day and then polish your filling carefully.

If you come to think about it you will notice that such a filling represents exactly an amalgam-inlay, where the presence of the cement is supposed to bring about a perfect union between the body of amalgam and the dentine. After all, whatever we know of in the way of filling materials, there exists absolutely nothing better to produce the ideal union between tooth and filling than cement as long as we use it as a simple lining and not as a permanent plug with exposure to mastication. This way of looking at the judicious employment of cement in operative dentistry has been taken in consideration even for gold fillings. Last year the *Cosmos* published an article by Dr. Joseph Head advocating cement as a lining before starting gold in large contour fillings.* Head esteems that gold, no matter how beautifully burnished and condensed to the tooth-walls, will in the way of an absolute union stand behind cement. He goes even further. In the discussion on the respective value of filling materials reported in the *Cosmos* last April he said that in his opinion this way of using gold on a lining of soft zinc-phosphate approaches the ideal.

---

*The same system has been followed for years past by a dentist of Berlin, Dr Erick Schmidt.

Inasmuch as Head is an authority whose conscientious principles are beyond doubt, it seems to me that this system of filling teeth with gold may be valuable for the conservation of bicuspids. Personally, however, I give the preference to porcelain inlays which after my idea will soon take the first rank in saving permanently our bicuspids.

To judge the precise value of a human invention, no surer proof exists than the trial of time. The ten years which have passed since its debut are a good measure to examine today porcelain as to its just merit. During this period, I have employed it in numberless cases of proximal decay between bicuspids and molars and I do not hesitate to declare before you that porcelain has succeeded where all other materials have failed and that on account of its inherent properties to combat and prevent the return of the carious process at the cervical border. How must we account for that? For two reasons: First of all porcelain in itself is the only filling material impossible to be attacked by the acids of the mouth. In the second place we can produce such a perfect union between the tooth and the inlay that the cement-layer will not get dissolved and consequently no invasions of bacteria will take place at the cervical border. No doubt failures will occur also with porcelain, but for these failures do not let us find fault with the material, but rather with ourselves. The art of porcelain is like a jealous mistress: it will not pardon the slightest neglect in workmanship. And there it is where its principal objection comes in: its exacting technique will demand even from the most rapid if not skillful operator a considerable amount of time, which with the present manner of proceeding can not be reduced below a certain minimum.

Success with porcelain as with all kinds of fillings in proximal cavities begins and ends with the right care and preparation of the cervical borders. The faithful fulfilment of this condition forms the keystone of the entire operation. Not enough stress can be laid on a sharp reproduction of the cervical edge of the cavity on the matrix. With the help of the set of instruments designed by Dr. LeCron, of St. Louis, the gold foil must be forced distinctly between tooth and gums. This is the only means of obtaining a perfect union of tooth and porcelain, so necessary for the patient to keep the interproximal space clean and in that way assist us in our efforts to shut out the invasion of bacteria near the gums.

There are dentists who contend that large contour-porcelain blocks will not stand the pressure of mastication. This contention—and I do feel convinced that presently most of you will be on my side—is erroneous. Cut away thin portions of the enamel, let the articulating tooth come within a hairsbreadth of the porcelain and no damage will occur to your tooth in the way of getting split or the porcelain cracked.

Let me then emphasize once more porcelain for proximal bicuspid and molar cavities. Let me further in this final conclusion recommend strongly to you the use of beautifully polished amalgams over cement, cement-fillings built on a basis of protection of the cervical margin and the employment of soft gold for cavities with strong walls. Where, then, do our classic gold contours come in?

Gentlemen, if this special work be limited to operators who not alone will do it after conscientious principles, but also with the certainty of a permanent result, then an immense percentage of those unsightly gold crowns will become unnecessary and a still greater amount of bicuspids will be saved. I can not illustrate better these principles than by repeating to you a word of an old esteemed veteran of gold filling, of Dr. E. A. Bogue: "The best dentist," I heard him once exclaim in our Paris society, "is not the one who makes beautiful gold fillings, but the one whose patients, when they grow old with him, have still their bicuspids in their mouth."

NOTES OF A CASE OF TRISMUS EXTENDING OVER TWENTY YEARS AND A CASE OF ABSCESS IN THE PALATE OCCURRING INTERMITTENTLY OVER TWELVE YEARS.

BY DR. FRANK M. FARMER, LONDON.

Mr. Chairman and Gentlemen: Instead of reading a "paper" in the ordinary meaning of the word, I am taking the liberty of bringing before you today the notes of a couple of cases occurring in my

---

*Read before the American Dental Society of Europe.

private practice in the hope that they may prove of sufficient interest to provoke discussion and draw from you an expression of opinion upon them. In hospital practice it is common to come across cases of exceptional interest, but they lose their clinical value owing to the fact that these patients seldom allow one to keep them under observation after they have experienced relief from pain or whatever their trouble may be, therefore I hope these two cases occurring in private practice may be of some slight interest to you. I have taken two cases only. (1) A case of trismus. (2) An abscess in the palate. Since they are fairly typical of conditions which we are frequently called upon to treat, and as the notes are somewhat lengthy, I thought you would be able to follow me with greater ease rather than if I read the notes of four or five different cases.

The first case (a case of trismus) is that of a man 48 years of age, who had led an extremely active life. About twenty-seven years ago when in the hunting field he was thrown from his horse, fracturing two ribs and the left clavicle and complaining of a severe bruised feeling in the region of the left angle of the mandible, but beyond this bruised feeling he did not experience any great pain or uneasiness until five years afterward when he noticed that there was some thickening at the lower border of the mandible and pain if he yawned or tried to open his mouth forcibly. He sought advice for this and the second lower left molar was extracted. This gave only slight relief and he was continually conscious that the movements of the mandible were becoming more and more restricted and the pain at times very acute. He was then advised to have the first molar extracted. About this time the right lower third molar and the two upper third molars began to erupt, occasioning great pain in their respective areas, but more particularly in the left angle of the mandible. In order to have this pain relieved he consulted a surgeon who extracted the second lower bicuspid and removed some sclerosed bone. As this afforded him no relief, in fact, the pain becoming more acute, he applied poultices externally, which resulted in an abscess bursting immediately in front of the left angle of the mandible. Being now free from pain he was satisfied to go on with this sinus for a number of years, until at last his friends persuaded him to seek further advice, owing to the manner he had of taking his food. I may say that so slight was the extent to which he could separate his teeth that he mashed his food and introduced it between his lips with a small spoon, and if it was a piece of bread he literally pushed it between his teeth with his fingers. On examination I found he could open his mouth very slightly and with the greatest difficulty; externally there was considerable thickening over the lower third of the masseter muscle and a large sinus at the angle of the mandible. I introduced a small electric lamp into the sulcus and with a sharp probe explored as well as I could the alveolar border, expecting to find some evidence of a third molar, but in this I failed. A radiograph was then taken, but it was so blurred as to be absolutely useless. I then gave him gas and passed a probe up through the sinus, but beyond some bare bone I found no evidence of a tooth or root. Feeling convinced from the patient's clear history of the case that the lower third molar was causing the trouble, I advised him to allow me to thoroughly explore the area under chloroform. To this he readily assented and gave me permission to deal exactly as I saw fit with any condition which I found, providing it appeared to be the cause of the trouble. Under chloroform it was possible to open the mouth to a considerable extent. I found great thickening along the posterior edge of the alveolar border where one would have expected a third molar to be, and with a gouge and mallet and surgical engine I removed a large amount of bone and soon satisfied myself by continuous probing that there was an embedded tooth situated very deep in the jaw. After nearly an hour of hard work I succeeded in freeing the tooth from a mass of sclerosed bone and removed it with a pair of upper root forceps. I scraped the sinus thoroughly and syringed it with carbolic acid 1-40 and was very pleased to find the stream pass out externally. I had the greatest difficulty to check the hemorrhage and it was only by repeated applications of adrenalin chloride and considerable pressure that I succeeded in doing so. I saw the patient the next day. He was fairly comfortable. I syringed the sinus and plugged it with cyanide gauze. On the second day he informed me that since the operation he had noticed the loss of feeling along the lower lip and the lower part of the face. On the third day after the operation the patient was so well that he left the Norsing Home, but as he had lost all sensation over the area supplied by the mental branch of the mandibular nerve I advised him not to shave until I gave him permission. The wound was syringed and plugged daily and healed up remarkably quick; in about three months after the operation sensation began to return to the lip and cheek and he was able to shave with a sense of security. On examining the tooth you will notice that there is an extremely large foramen running antero-posteriorly through the tooth. Now it is quite certain that either the inferior dental nerve and artery or both passed through this foramen, their severance in the extraction being the cause of the severe hemorrhage and anesthesia. Well, gentlemen, there is the case, and now I want you to help me to discover the cause. My theory is this: At the time of the accident the man was thrown on the left angle; the force was not sufficient to fracture the bone, but sufficient to cut off the blood supply to the third molar (for I am of opinion that on microscopical examination it will be found that the remainder of the root below the ink mark which in my mind forms a line of demarkation between the developing tooth and something superadded after the accident, is bone and not dentine and cementum). At the time of the eruption of the three other third molars he had pain generally, but it was more acute in the left angle and it was coincident with the eruption of these teeth that the swelling in the angle and closure of the jaws occurred. It therefore appears to me that the blood supply to the tooth being cut off there was the eruptive force (we are not sure what that force is) exerting itself on this pathological tooth, which being pathological could not take part in a physiological process such as tooth eruption is; the tooth consequently in the presence of this force became an irritant and continued as such until its removal.

The second case which I will ask you kindly to allow me to bring before you is that of a lady 28 years of age. She was brought to me with a large abscess on the palate situated on the left side. more anteriorly and laterally than the position in which an abscess from a lateral incisor is usually found. On examining her teeth I found the left lateral incisor missing; I may say that her brother and sister also share this hereditary deficiency. The left central incisor was filled but pulpless, the right central incisor quite sound, and the right lateral incisor a peg-shaped vestigial tooth; the first and second left upper bicuspids were displaced outward, as you will observe on this model. The patient's history was: While in Melbourne twelve years ago she consulted a dentist about her teeth, but more particularly about the left central incisor, on which she had received a blow while playing with a child, as far as I can gather; on this occasion the dentist removed the pulp, and after several dressings the tooth was filled. About six months afterward a swelling occurred in the palate, accompanied by severe pain and the tooth was reopened, with the result that the patient experienced relief. Thus more or less this condition repeated itself until I saw her last February. During the whole of this time she had never felt pain in the tooth neither on percussion nor during mastication, but always in the palate. The dentist who brought the case to me suspected an unerupted lateral incisor to be the cause of the trouble, but as a very clear radiograph taken with the film on the mouth failed to indicate any sign whatsoever of a tooth, and as the patient complained of these swellings being fairly rapid as against the gradual swelling we get during the eruption of a tooth, I determined that the cause, whatsover it might be, was not that of an unerupted tooth. As the patient was in great pain and as the abscess was very acute on the first occasion I saw her, I advised the immediate opening of the abscess under chloroform, which I felt would give me an opportunity to find the cause of the trouble. Before the operation I obtained the patient's consent in the presence of her mother to allow me to remove the pulpless central incisor if I thought proper. Under chloroform in the recumbent position I opened the abscess, making a long deep incision and came into a cavity which extended laterally to near the middle line on one side and outward to the roots of the bicuspids on the other, causing, in my opinion, the displacement of the latter, a point which I think worth remembering. This cavity also communicated with the left nostril by a large opening in its floor. So far I had not found any cause for the trouble. I explored with sharp probes every possible bit of the bone to try and locate a necrosed root or unerupted tooth or any foreign body, but having failed to do so, I examined with a fine probe the upper third of the central incisor, the alveolus of which was removed by absorption, and found it was completely bare and I therefore determined to extract it, and was delighted to find that it was the whole cause of the trouble. The root was quite black and there was a large perforation near the apical foramen (evidently caused by a root drill) and the apex itself was quite rough from absorption; the socket of this tooth easily admitted the passage of an aural probe into the cavity in the palate and also communicated with the sinus in the nose. The further treatment after curetting was quite of an ordinary character. The cavity was syringed with a carbolic acid 1-40 and plugged with cyanide gauze, and occasionally I placed gauze dipped in H_2SO_4 1-30 to hasten the separation of any dead bone; in about two months the cavity was closing rapidly and according to the dentist the patient was absolutely free from pain.

I thought this case might be interesting to bring before you, first because of the remote cause of the trouble, and secondly, because of the displacement of the bicuspids.

I mention the matter of the displacement of the bicuspids being due to the abscess because I think it might be argued that this was due to overcrowding, but in my opinion such was not the case, and the patient, a very intellectual woman, told me most emphatically that the cusps of the bicuspid were gradually catching the inside of the cheek and this had been most marked in the last eighteen months.

DR. OLLENDORF'S SYSTEM OF CAST GOLD BRIDGES.

BY PROF. WM. SACHS, D. D. S., BERLIN.

Mr. President and Members of the A. D. S. E.: Allow me to present to you a new system of cast gold plates for dental purposes, but before demonstrating it practically, a short analysis of the different details of the operation may be necessary.

The process of making dental plates by means of cast metal is not new by any means, but it is not often employed on account of its difficulty and uncertain results.

For aluminum plates, however, the casting method was quite in favor for a time, but soon abandoned, inasmuch as aluminum did not come up to expectations.

Dr. Ollendorf of Breslau has now succeeded in bringing to a point a system for bridges, plates, and regulating appliances, which deserves to be taken into consideration by the profession, as for many cases its decided advantages will place it far above anything tried up to now in that direction.

---

*Read before the American Dental Society of Europe, August, 1906.

To make myself better understood I have presented you a few illustrations in connection with Dr. Ollendorf's system.

(These illustrations are taken from an article of Professor Jung, published in the *Deutsche Zahnärztliche Zeitung.*)

The first step is to construct on the plaster model in wax a plate, which must be exactly like the piece to be made in metal. It is of great importance to give this wax plate a beautiful finish, as by its perfectly smooth exterior the finishing of the cast piece will be reduced to almost nothing.

As far as my experience with this new method goes, I should advise its use particularly for bridges; with large thin plates my results have been sometimes failures, but frankly I admit that these bad results are probably the consequence of my lack of experience, since you see by these plates here that they can be made just as perfect as bridges.

Now, to give you a satisfactory idea of the whole process, I think it best to explain to you a special case which is likely to happen frequently in our daily practice.

The manner of proceeding will be exactly the same, whether we have to do with a different kind of bridge or any other appliance.

Let us take then the following typical case:

Loss of the bicuspids and first molar; the upper left cuspid root and second molar to serve as anchorage.

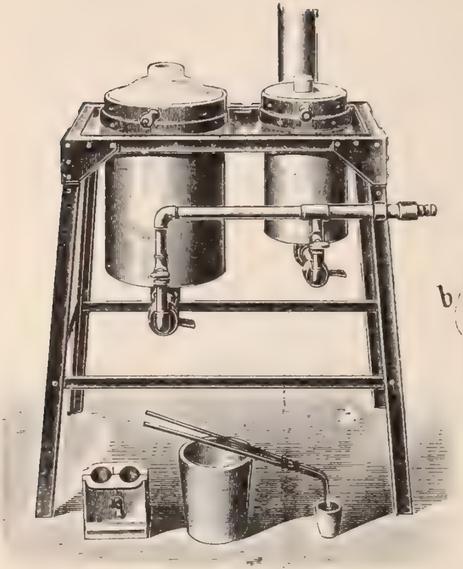
After the usual preparation of the root for a Richmond collar band and the molar for a crown, both to be the piers for the bridge, we make for the root a band out of platinum or plaino-iridium, with a cover and pivot soldered with pure gold and a band for the molar.

Then take an impression of these two posts in place, put up the exact articulation and fix the model on the articulator.

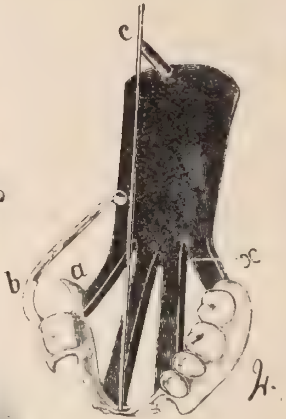
Now make in wax (a mixture of wax with kolophonium is preferable) the bridge exactly as you want to have it later in metal.

Porcelain surfaces are not backed with gold, but simply stuck to the wax. For the protection of the porcelain in chewing, cover the back of the artificial tooth with a thin piece of gold or platinum foil, burnished tight against it and largely overlapping its masticating surface.

If you prefer a porcelain inlay to a metal tooth in your finished bridge you simply form that tooth in wax on your model and carve in to the buccal surface a hollow place for the inlay.

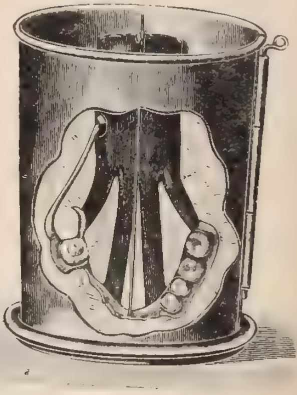


1

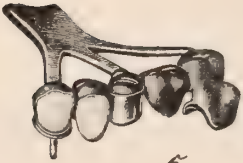


2.

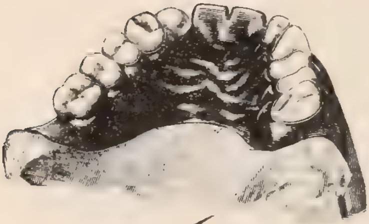
3.



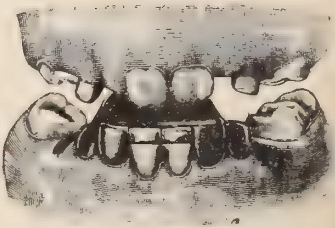
4



5.

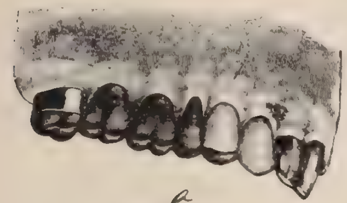


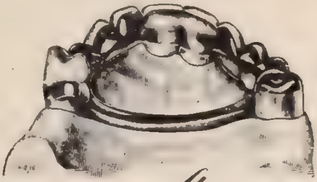
6

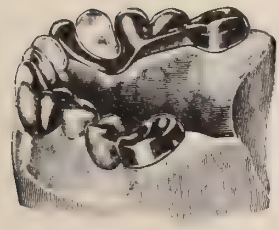


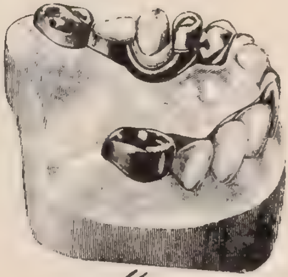
7

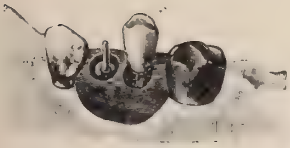
To simplify this part of the work it is advisable to have in stock a large number of different size crowns in wax, ready to serve every possible case by adding or taking off wax.

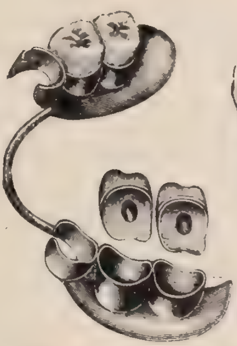

8.

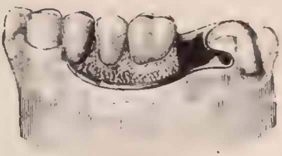

9


10.


11


12.


13


14

The bridge once perfectly shaped has to be connected with what we may call the "melting handle" (Fig. 3), made out of wax in an iron mold. You take now the flat end of this handle, split it into three or four ends according to the size of the piece and connect these branches with the bridge just as you can see by Figs. 2 and 4. You have to round off on the handle all sharp corners (at the point x in the illustration), as otherwise the investing material might break off at these points and damage the piece.

The bridge is now ready to be invested. For this purpose we take an ordinary sheet-iron tumbler filled up with a mixture of plaster and fine molding sand. This investment material ready, remove with great care your bridge from the model, cover it with a coating of pure alcohol, to avoid air bubbles, and invest it in this specially very thin prepared plaster. After about ten minues the plaster will be hard enough to enable us to remove it in one block from the tumbler.

This plaster block has now to be dried, which is done on a Bunsen burner. In about from ten to fifteen minutes the plaster is sufficiently dried by the flame, which at the same time will have softened enough the upper part of the handle to enable us to remove it. Precaution should be taken to reverse the block in order to avoid particles of plaster falling into the mold.

We are now ready for the heating of the plaster form, and for this part of the work Dr. Ollendorf has invented a special furnace constructed by Mr. Otto Trottner, which you can see well illustrated by Fig. 1.

You place the plaster block into the larger boiler of the two and light the gas. It may be that later on electricity will replace gas to advantage, but for the moment experiments with it have not been made yet.

The block has to be left one and one-half hours under the influence of heat to allow the wax to be burned out thoroughly and the mold perfectly heated all over for the pouring of the melted metal. The best indications for the proper moment of the pouring of the gold are the colors of the melt canals which are formed, as you remember, by the wax handle. First, they appear black, then dark red and finally of a more intense red. This is the right time for pouring out the gold.

The gold can be melted either in a graphite pan in the smaller recipient of the oven or even in any melting apparatus in your possession. Take the pan with a pair of pliers, remove the cover of the oven and now—without haste, but still with great *steadiness* (this is an important point)—pour out your metal into the melting canal. It takes from three to four hours to have the plaster block and the piece inside absolutely cooled down. If you venture to take out the piece too soon you risk deforming it and having your teeth cracked.

The piece once out, all you have to do is to saw off the melting handle and polish and finish after the usual manner.

It seems to me that gold will always remain the preferred metal. I personally use 20 mark pieces.

As for the amount of gold to be used, one must take one third more than apparently needed and that with the object to produce sufficient pressure in pouring it out. The piece of gold which is cut off, of course, may be used for the next case, but to avoid porosity and to get a smoother surface of the gold, you better add one or two 20 mark pieces.

The union of the platinum posts with the gold is absolutely sure; they do not require any special preparation for it.

As I said in the beginning, for the molar a simple platinum ring is sufficient, as you can get a well articulated crown by modelling your masticating surface in wax and have that replaced by the melted gold.

Tube teeth are excellent for this work. You simply set such a tooth at the proper place in the wax so as to leave a mark; put a pivot into the tube well fastened in the wax and then carefully remove the tooth; in that way the pivot will nicely keep its position in the plate.

In fact, any kind of tooth can be used for this special work, except the diatoric ones, as these crack too easily; however, they are very suitable on account of their forms, as you may see in Fig. 13.

There is no objection against the application of pink rubber to form the gums. All you have to do is to shape the border of the plate to somewhat turn over itself and give the parts to be covered with the rubber a rough surface on the wax (Fig. 14).

Experienced practitioners will easily find ways and combinations how to use this system and apply it to every suitable case.

You can easily understand that even the average mechanical man will—after the first apprenticeship—by this system produce more exact work than after the ordinary method. It saves a great deal of time and as there is no soldering to be done no deforming of the plate will occur.

The system is patented, but in buying the furnace you buy the license with it.

THE CLINIC.*

BY DR. CLAYTON H. STEARNS, OWATONNA, MINN.

The term clinic, derived from a Greek root signifying a couch, was first applied to one who was confined to the bed, then to the rites of the church administered to such an one. It was later used in medicine to signify bedside teaching, and in time was made to cover all forms of instruction demonstrated by or upon the patient. With this broader significance was the term used in dentistry, and still further expanded until it is now made to cover everything in the way of demonstration or exhibition, whether applied to the patient, materials or methods. We even have the term table clinic, an absurdity, in constant use.

One fundamental idea, however, pervades the various uses of the word, instruction. An operator who does not instruct is not a clinician. Such instruction must necessarily be elementary in its application, as it appeals only to those whose limited experience does not enable them to recognize conditions; or to those unfamiliar with operative procedures, who, like the man from Missouri, must be shown. It therefore forms an important part of school work where, until the eye and hand of the pupil are trained, it is necessary to direct the one and guide the other.

In society work, therefore, it has but small part, as:

First. It is unnecessary. The audience is supposed to be of professional men, trained to observe and skilled to perform, to whom a few minutes given to lucid explanation would be worth as much as many hours of actual performance.

Second. It can reach but a small number. The operator who has an idea to present (the only possible excuse for appearing at a clinic) should have a wider field.

---

*Read before the Minnesota State Dental Association, June, 1906.

Third, and most important of all, is the lack of record. Where a clinical instructor has an audience of so few, the one who reads a paper or participates in its discussion has directly the entire society and indirectly the profession at large, at least the valuable part of it, the reading and thinking portion. His thoughts are made a matter of record and become imperishably a part of the vast accumulation of knowledge possessed by the profession, always available.

There are many obstacles to be overcome before even the limited usefulness of the clinic can be made really available to the society.

First and foremost. The operator and patient must be protected. Just as long as present conditions prevail will we find our really prominent operators conspicuous only by their absence, and those who do operate depending on chance for a subject, as no one wishes to introduce one of his own patients, for reasons which are obvious to those who have attended our so-called clinics.

Second. Each operator must present his ideas in a paper for discussion and record, and his demonstration of those ideas should be given the attention of the audience for the time required to present the essential points.

The relative position of the clinic must be clearly defined. As the one who presents a paper may find it necessary to illustrate it by drawings, so he may find it necessary to demonstrate it in practice, but the principal part is the text. It is as absurd to give a demonstration with nothing to demonstrate as to present illustrations with nothing to illustrate.

Therefore, in the presentation of ideas, the important part is the paper in which they are set forth, next the illustrations to make clear the text, and last of all the demonstration for the benefit of the few who are unable to follow the line of reasoning and must be shown.

We hear the claim made by many—we can demonstrate, but cannot write papers. No more fallacious claim was ever advanced. No man who has the ability to originate a plan for the accomplishment of a certain end, or to master and assimilate those of another will have any difficulty in presenting them clearly. He may not present a literary masterpiece. If that were necessary few papers would be written, but he will be able to present his ideas clearly and understandingly—the more clearly and perfectly in proportion to his mastery of the subject.

This lack of ability to express an idea is generally caused by its absence. One may have a vague, hazy, nebulous something, which, given a proper period of incubation, may develop into an idea. If he attempt to demonstrate this it is unnecessary to state that he generally succeeds.

What can we expect from a clinic where such demonstrations are allowed? Naturally what we have today—an absolute dearth of ideas. A large proportion of operators simply demonstrate their ability to operate. Another large class are found demonstrating their ability to get their names on the program for advertising purposes.

This is bad enough, but what are we to expect when a number of these combine? What we had at the last Dental Congress and at the last meetisg of the National Association. Certain names bracketed in the program, a well-arranged claque at the meeting, and a set of beautifully written press notices following.

Now, as to the remedy. Place no man's name on the program who does not embody his ideas in a paper for discussion and record. We can then have a well-arranged clinic for the demonstration of such new ideas as may require it, with an exhibit of such instruments and appliances as may be desirable. By so doing we will get rid of four out of five operations and give the time and attention to those worthy of it.

ROACH MOLDABLE PORCELAIN.

BY G. W. HASKINS, D. D. S., CHICAGO, ILL.

The historical feature of the subject of the paper can be covered in a few words, as it dates back but a year or two. In April, 1904, Dr. Roach conceived the idea of a material which could be molded to a cavity while plastic, removed before it was completely hardened and then baked, thereby greatly increasing its resistance to force and the chemical action of the fluids of the mouth, this finally to be set in the cavity with one of our well-known cements. This description is

---

*Read before the Northern Illinois Dental Society, October, 1906.

an accurate one of the material now used. In the first stage, it consists of a powder and a fluid which are mixed and act very much as do our slower setting cements; after baking its character is entirely changed, it becomes somewhat like porcelain, but more like ironstoneware or the china of which table dishes are made. It does not bake to a gloss, as does porcelain, but is opaque. Its factured surface has the appearance of broken stone, and its resistance to breaking strain is several times that of dental porcelain. Its fusing point varies from 1,000 to 2,000 degrees, according to its composition. In the earlier formulas it showed a tendency to oxidise in some mouths, but this has been overcome in the later productions. In color it can be had in various shades of yellow and gray, and as a nonconductor of heat and cold it is the most perfect filling material we have at our command. The color of moldable porcelain precludes its use in the incisors or cuspids. In bicuspids it can occasionally be used when conditions permit it, but its greatest value lies in the molar cavities where large restorations are called for with hypersensitive pulps or in pulpless teeth that would otherwise be crowned. Cavity preparation is practically the same as for other inlays in regard to the fact that the cavity must be made so the impression and inlay can be readily removed, undercuts are filled with cement when they exist, margins are shaped at an angle of 90 degrees as far as possible, and when weak walls or margins are present they should be ground down far enough to leave a good bulk of filling material over them to protect them from fracture.

The inlay is best made from an impression or rather model of the cavity. The most satisfactory impressions I find are made by encircling the tooth with a thin copper matrix a little higher than the crown of the tooth. The modeling composition, when warmed, is formed into a cone and pressed into the cavity. I use that made by the Detroit Dental Manufacturing Company. The point of the cone is first pressed into the more remote portions of the cavity, to which it can be coaxed with amalgam burnisher. Should it harden before you have completed the impression it can be reheated while in place with warm air from the ship blower. When satisfied that it is well down, a plunger made of wood almost as large as the matrix should be used to force the impression material hard against all the walls and surfaces of the cavity. It is then chilled and removed.

With the matrix confining the modeling compound and the close-fitting plunger preventing its escape, it will flow in the lines of least resistance and a perfect impression will result, and this and perfect model are necessary to success. After obtaining the impression a bite is taken of the tooth to be filled and the two adjacent teeth. The patient can then be dismissed and the operation completed in the laboratory. Copper amalgam I have found the best material of which to make the model. The matrix usually comes away with the impression, if not it can be replaced upon it and the impression is then filled, using small pieces of amalgam at a time, and exercising great care that the mold is well filled. After filling it should have at least twelve hours in which to harden. Imbedding the impression and matrix in plaster is advisable and facilitates the process of filling. The model of the tooth is then placed in that portion of the bite made by the carious tooth and the bite filled with plaster of paris and set up on the articulator.

We now have the tooth to be filled in metal and the adjacent and occluding teeth in plaster. This will enable us to mold the filling properly with regards to proximal and occlusal surfaces. The method of mixing the material is quite like that used in our cements, having a slab of glass of generous dimensions and a large, stiff spatula, as the mass is of some size and requires vigorous mixing. Enough powder should be incorporated with the fluid to make a stiff mix, and should be spatulated very thoroughly, making a mass like putty in consistency. Spatulation should be continued until it begins to stiffen, the exact point being hard to indicate, for if too plastic it is apt to stick to the model and is hard to handle, and if too hard it cannot be forced into the model or will crack and be friable under pressure. It wants to be stiff enough so it can be taken up in the fingers and molded into shape and yet not stick to the fingers. Dusting the fingers in the dry powder will overcome this stickiness to a great extent and enable you to handle the mass while still soft. It hardens so slowly that there is plenty of time for each step. The metal model of the tooth should be oiled with sweet oil, and when the ball of cement has reached the right consistency it is placed in the model of the cavity and molded to place and shape. After it has stiffened a little it is removed and then returned to place. The first removal may have distorted it somewhat, but it is still soft enough to be molded to place again. It may be well to do this a second time. It can then be left in the mold till it is quite hard. The object in removing it and replacing it is that if it is not removed before it becomes thoroughly hard it is often quite difficult to do so without breaking it. After it is hardened, with a sharp knife it should be carved to shape both proximal and occlusal surfaces. In carving the inlay I like to make allowance, when possible, for the shrinkage which takes place during the fusing by leaving it larger than it is to be ultimately, although this is not absolutely necessary, for new material can be added to the original bake and it becomes homogeneous. After the carving is completed it is fused, but never pass it into the hot muffle till it is thoroughly dried, either through a natural drying or by slow artificial heat. Like translucent porcelain it reaches its maximum degree of hardness by a proper fuse. If fused too much it is glossy and all fine lines and sharp edges are lost. If under-fused all shrinkage has not taken place and it is not strong. One test for a proper fuse is to carry it far enough so a drop of water on it will not be absorbed—it has lost its porosity—and another is to fuse so that when baked it has lost its purple color. Like other porcelain these points can be reached by subjecting it for a longer time to a lower temperature or for a shorter time to a higher degree of heat, and it is well to bear this in mind in fusing an inlay that requires three fittings for the first portion used will have to receive three times as much fusing as the last, and may be over-fused, and yet if it is not fused so all shrinkage has taken place the first time, it will shrink more on the second heating. This makes it difficult to get an accurate fit, and may be overcome to a degree by leaving the last addition of porcelain somewhat under-fused, which point a little experimenting with your furnace will enable you to reach accurately. I use a Hammond, and give it four minutes on the fifth button after a test piece of pure gold melts. After cooling, when you try the inlay in the model you find it no longer fits, the model is oiled again, a new mix of the porcelain is prepared and applied to the portion of the inlay which comes in contact with the walls of the cavity, it is then pressed into the model and treated as in the first instance; removing and refitting. What little trimming is needed is now done and the inlay fused again. The mass of new material is so small that on the second fusing but little shrinkage takes place, but in large restoration inlays a third fitting and fuse are usually necessary, after which it should fit the model accurately. The inlay is now ready to be shaped by carborundum stone where needed on proximal and occlusal surfaces and polished with sandpaper disks. It is then set with cement. In complex cavities consisting of mesial, distal and occlusal surfaces the inlay in shrinking is shortened in its mesio-distal dimensions, and upon trying it in the model it will not go down to place, but bears hard on the pulpal walls of the cavity. This is true of all cavities in which there is a central elevation, and after the first and sometimes the second bake a little grinding is necessary to overcome this misfit. It is also well to avoid such shapes of cavities when possible. Before we could fill teeth with amalgam or gold, cement or porcelain, we had to learn the peculiarities of each material, how to handle them and what shape of cavities were best suited to each, and this is equally necessary in the use of moldable porcelain. Experiment in the laboratory until you know how to mix and mold and bake it, then given a good impression and model the balance will be easy and satisfactory. Those who now take up the work for the first time will have but little trouble, as compared to those who started a year or two ago with this material, as so much improvement has been made. My greatest satisfaction has come from using these inlays in such a cavity as came to me several weeks since. Patient came complaining of slight uneasiness and sensitiveness to sugar and acids, indicating a hypersensitive pulp. I found the trouble in a leaking amalgam filling in second bicuspid, consisting of large mesial and distal cavities, decay having taken place since filling and the pulp nearly exposed. Since filling with moldable porcelain there has been a complete cessation of the trouble and the tooth does duty with the others without care or coddling.

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held November 20, 1906, with the president, Dr. Hart J. Goslee, in the chair.

Dr. Sydney J. Knowles and Dr. W. D. N. Moore read papers on "Gold Inlays."

DISCUSSION.

Dr. C. N. Johnson:

There are two gratifying features of this evening's meeting which appeal to me. One is the fact that the program has been provided by two young men who have presented papers in which the subject has been thought out carefully and presented in a very lucid manner. The other is the immense audience that has turned out to encourage these young men. On account of this large audience and the interest taken in this subject, I should like to speak at considerable length, but owing to the lateness of the hour I shall limit what I have to say to a few minutes.

The contention made by inlay enthusiasts is that the preparation of the cavity is much easier on the patient than cavity preparation for fillings. There are some cavities which, in order to insert an inlay properly, will require more cutting and inflict more pain than the proper preparation of the cavity for an ordinary filling. We must not lose sight of that, and in considering the indications for inlays, this one factor, the original form left to the cavity by the process of decay, should enter more into our consideration than it has in the past. Let me refer to a particular kind of cavity to illustrate what I mean.

Supposing we have a cavity in the proximal surface of a bicuspid which involves the occlusal surface but little, but extends wide bucco-lingually at the gingival margin, where the cusps of the teeth are perfectly supported by sound dentine. To put an inlay in a cavity of that kind, as is often done, involves greater cutting of the tooth tissue, and cutting that is not painless, than would the preparation of that cavity for an ordinary filling. That is only one illustration.

There is this feature, however, about inlay work that appeals to me, as it must to anybody who has practiced it, and that is, it interests the patient. It is not only because it is an easier operation to them than the operation of putting in an extensive gold filling, but the process is new to them; they can enter sympathetically into the technique of the operation, and in view of that inlay work is not so hard on the operator as the ordinary large gold filling. Inlay work in that connection has come to us as a saving grace for the long hours we devote to operations. To put in ten hours at diversified work is not so taxing on the operator as eight hours would be concentrated on one single thing, such as malleting in of large gold fillings. In that respect inlay work is an important advance in our profession.

Another thing that is commendable in regard to inlay work, if it is practiced to its legitimate conclusions, is that it does away, in many instances, with the abuse of crown work; that is, it fills a niche between ordinary filling and crown work that is sadly in need of filling. If dentists are conscientious, they can do away with one-half the crowns they put on human teeth today, and if they do that, Mr. President, they are accomplishing something for humanity that is worthy of any profession. I shall not talk about the abuse of crown work, which is really a serious matter.

Dr. Knowles spoke of repairing a break in the matrix. If I understood him correctly, he said he would use pellets of foil or gold foil for that purpose. Let me make the suggestion that if he will use one of the crystal forms of gold for repairing breaks in matrices, the gold will work better than any of the foil golds. It can be pressed down to place, will remain seated, will not curl up, and is more manageable for this purpose than any of the foils.

I would like to ask Dr. Knowles how he mounts these carborundum points; what particular forms he gets, etc. They are very useful in cavity preparation for inlays, and it will be instructive if he brings out that point a little more clearly in closing the discussion.

One thing that impresses me in the consideration of this subject, whether by men who are utterly opposed to inlays, or by men who are enthusiastic in favor of them, is this: If you listen to the man who is opposed to inlays, you will think all of the virtues of operative dentistry are concentrated in the filling, no matter whether it be foil gold or amalgam, and that all failures come from inlays. There are others who think that the only virtue in operative dentistry is to insert inlays. I deplore that kind of teaching from either of these parties, because there is an element of good in all kinds of practice, and I believe the man or woman, who loves the highest and best in dentistry will be eclectic in this matter, and look broadly over the field, and adopt the particular method which will yield the best results in each given case. When we hear it said that the gold fillings we have put in are all defective (and we have heard that in the past), I am reminded that I have seen gold fillings that have been in teeth for more than half a century still saving the teeth. I have seen one gold filling that has a record of sixty-three years, and it is still doing good service. That kind of service cannot be ignored. Even cohesive gold can be made to hermetically seal a cavity, and you cannot do any better than that with the best cement filling. I am not decrying inlay work, because I know there is a definite field for it. Some of the models that have been passed around are monuments to the skill of the young men who have constructed them, and work done along that line will give good service in teeth in the mouth. What I make a plea for is that every man shall be sufficiently broad mentally to take in the best there is and use it in his work. A thing I deplore is that men get into grooves and ruts when they ought to be sufficiently broad to climb out of them. We know that gold foil fillings have not lost their usefulness. On the other hand, the man who does not use inlays under proper indications is not living up to the possibilities of his profession. What we need is to be more tolerant of the opinions of others.

Dr. William H. Taggart:

The fact that we have two young men who are not only able to read such papers, but to exhibit such work, should be a means of congratulation to the Chicago-Odontographic Society. Both of them are under thirty years of age, and I doubt if any society over the country has young men who are capable of doing better work than these young men have shown.

When I read Dr. Moore's paper I was inclined to differ a great deal with him. My idea was that the swaged cusp could be made more artistic and more certain of articulation than in building it up in an indefinite way by solder. But after seeing Dr. Moore's beautiful work I feel like taking it back.

Dr. Knowles alluded to his method of taking an impression, but I think there is an element of inaccuracy in the method, not but what he can get good results, but I do not think he can get as uniformly good results as can be obtained by a method I presented several years ago, and which I have used with satisfaction ever since.

In taking an impression as Dr. Knowles does it, there is a tendency for the overhanging impression material to break away, and it is impossible to know whether it does or not.

Let us suppose that we have a proximal cavity in a bicuspid and a molar is adjoining it. I take an impression by bending a piece of metal at right angles, and in that I place the dental manufacturing modeling compound, because it is a low heat material. I press it to place and get an overflow in this impression, as in Dr. Knowles'. I take it out of the cavity, and, chilling it with ice water, I trim away all this overflow, leaving the thirty-secondth of an inch that is not in contact with the margin, and putting it back into the cavity again. It will go in like an inlay. I put a wedge in proximally, and, with pressure on the grinding surface, warm water is dropped on very slowly until you begin to see it is yielding under this pressure, and then reset it. After chilling it, and taking it out, you have an impression which is as accurate as an inlay would be, with no element of uncertainty as to whether the margins have been distorted or not.

Dr. Knowles spoke of the advantage of inlays for children. There are very great advantages, because I find in city practice this idea of temporizing with children's teeth is doing them a great deal of harm. A child comes with a cavity that is rather difficult to handle, and the child itself is just as difficult to handle, and one's time is somewhat limited. A cement filling is put into the cavity and the child comes back at the end of two or three months, when that process is gone through again and again. The child remembers that it is the same tooth, and becomes discouraged. Now, at one sitting, with a little more strain than is endured by the child for the insertion of a cement filling, a gold inlay could be put into that cavity at two or three sittings, one sitting for the preparation of the cavity, one for taking the impression, and one for cementing it to its seat. Then the cavity in that tooth is filled and finished, as near as can be, for all time. It will last longer, will give more satisfaction, and will encourage patients as to the desirability of saving their teeth. The parents will see that what the dentist has done for such teeth has been beneficial and lasting. It does not make any difference what kind of fillings we put in children's teeth, the parents hold us responsible just as much for a cement or gutta percha filling as for a gold filling.

Dr. Moore speaks of taking seven or eight years to test out something. I do not think that is quite necessary, because these ideas are more in the line of growth. They are not innovations, they are not new ideas, we simply make little changes here and there, it is not necessary to test all that for eight or ten years, because we have gone all through it.

Dr. Moore speaks of pins as being a detriment. Oftentimes, when we are working on the occlusal surface of a bicuspid or molar, a small pin, the size of a tooth-pin, stuck down in the sulcus, is a great help rather than a detriment, in order to get retention at that point.

In speaking of the matrix for an inlay, there is one point I wish to impress upon you: If you will recall the men forming matrices who have given clinics, you know they will burnish here and there and go over it again and again. My idea is this: When you once get any part of a matrix down to its seat, put some solder on it. You do not have to go back and do that puttering act, which wastes more than half of your time.

I cannot criticize the results of Dr. Moore when I see such beautiful work as he has shown here this evening, but I do feel that such results as he has shown cannot be attained by the average dental practitioner as well as they can be by the swaging process. Carved out of wax, it makes it possible for the average men to get artistic results when he has to do the carving himself. Dr. Moore describes or speaks of the great care that is necessary in this building-up process in the use of the blow-pipe, and if the same amount of care was used in swaging cusps, we would get equally satisfactory results.

Dr. Knowles alluded to the saving qualities of inlays as compared with gold fillings. I wish to speak of that for a moment. There is no doubt, as Dr. Johnson has said, that gold fillings have been inserted for many years in teeth and are still doing good service, but we know equally well that gold inlays have been put in teeth and have not been there five years, showing there is some defect somewhere in the gold inlay that has to be looked into, and the reason that a large gold inlay is less apt to have a recurrence of decay take place, to my mind, is this: It shuts off capillary attraction. You cannot place gold and tooth substance in such absolute contact but what there will be a place for capillary attraction. There is a small space there for the leakage and seepage in what we know to be an excellent gold filling. When the surfaces are cemented, one to the other, that capillary attraction is cut off, and there is no seepage. I am speaking now of short-lived fillings.

The fact, too, that these cavities for gold inlays can be prepared with wheels is a decided advantage. This was impressed on me more fully today than it has been in a great many years. I have a lower third molar which, through my carelessness, has had its pulp exposed. I destroyed the pulp in it, and have been puttering along with it, but this afternoon it gave me trouble, and I felt the necessity of going into it and introducing some medicine in there. In so doing I used a steel bur, and you would be surprised, if you have not already had the experience, what a tremendous lot of jar there is connected with a bur in the mouth. (Laughter.) The fact that there was prospective pain from that pulp, coupled with the jar, which was really more to be dreaded than the actual pain, gave me considerable trouble. I took a carborundum point, introduced it at right angles, and it did the work. When treating children's teeth you frequently say to them, "I am not going to hurt you," yet you are hurting them all the time you are saying that. If you talk to a child properly you can prepare the cavity beautifully with just the kind of margins you want with these carborundum stones.

A point I want to make is with reference to the shape of these stones. If you take one of the larger wheels, it gradually wears to a size that is just suited to going into a large cavity, and in shaping the margin do not use that stone until it gets to be the size of a pin-head. Use it for the place it has worn itself to. Lay that one aside. Do not mutilate a stone that has a given form and is nicely adapted to a certain place. In that way you get a beautiful line of stones which will take care of these cavities.

Dr. Lester E. Bryant:

It is hard to discuss a paper when your ideas are practically the same as those of the essayist, but there are a number of methods being used today in inlay work, and I think we are all too prone, after listening to the method of this one and that one, to take up one after the other and not develop perfection in any method. The thing to do is to select a good method, and then stick to it until you become perfect in it. There are little tricks in all these methods. Let us take, for instance, Dr. Knowles' method. The main thing with him is to reproduce that impression; whereas in Dr. Moore's case it is the contouring. It is hard to contour gold. I have tried it many times, and it is the hardest thing I have ever attempted. That is, I build up my matrix with solder without any swaged piece. My method is to form my matrix in wax as I want it, shape it up, contour it, and burnish the inlay, using platinum around the contour as it is in place, and then I have the occlusal surface to look after, which is not so hard. One needs to be expert in building up cusps and in cutting out fissures with bur, so it is not so hard when you have the contour looked after.

Dr. Moore speaks of loosening the inlay after it has been put in position. When I put an inlay to place I want it to go straight home, and I never loosen it again.

Dr. H. N. Orr:

Almost everything has been said that can be said with reference to this subject, but I have a few opinions I might mention.

Dr. Moore said, if I understood him correctly, it is not practical to make a die of fusible metal that is sharp enough to make an inlay from. I have here a couple of dies in Mellotte's metal, which I picked up from my laboratory bench this evening, and which I will pass around for your inspection. One of these is a large restoration of a lower molar that would seem to need a crown. I agree with Dr. Johnson that there is more harm done by crowning teeth than by any other operation in dentistry, and consequently I put in large restorations where it is practical to do so, instead of crowning. The other is an inlay in a vital tooth for anchorage to a bridge. I think that where it is possible to use an inlay for anchorage, it is much better than a crown.

Another indication for gold inlays is in a close bite where a gold filling has been knocked out and battered. I had an experience with such a case a short time ago. A lady came into my office with two cuspids and a central left in her mouth, the rest of the teeth having been restored by a plate. There was a filling missing in the mesio-incisal angle of the central. I put in a gold foil filling and hammered it until she could not stand it any longer, and thought I had a good filling. She came back at the end of three weeks with the corner of that filling looking like a rivet-head. I dressed it down and told her to try it again. She did so, but came back later with the filling out. I restored that angle with a gold inlay made with 22 K. solder and it is still in place. I think it will stay there.

I use a platinum matrix around the proximal surface of inlays to build the contour, filling the matrix from the occlusal, and build up my cusps with solder and blow-pipe. I think a cavity should be so formed as to hold the inlay in place, relying only on the cement to hermetically seal the cavity. It is possible in nearly every instance to so form the cavity that the inlay cannot be dislodged.

Dr. E. J. Perry:

This subject is very fascinating. The method of building up solid gold inlays which I use has not been spoken of in the papers nor in the discussion.

I simply use Pack's pellets. I use a copper amalgam model to begin with, and platinum foil, 1-1000 thickness, and swage the platinum into the model. Then with my pluggers, using the largest pellets I can buy, I fill these cavities full just as I want them built up, invest them in an investment compound, and flow some 22 K. solder into it and finish it. That is the way I build mine up. You can do that by using a gold matrix as well. You can get contour and contact points, and you can build up your cusps just as you want them, and take your own time to do it.

Dr. Henry N. Pitt:

I should like to ask Dr. Knowles, in closing the discussion, to give us some of the details of his laboratory work in making these models and bringing the pieces together.

Dr. William T. Reeves:

There is one point I would like to speak of, in order that it may be a matter of record, and that is in connection with the remarks made by Dr. Johnson, namely, that there are two classes of cavities that cannot be handled well with inlays on account of extensive cutting which is required, illustrating that with a bicuspid or molar, in which there is very little of the occlusal surface involved, but considerable bucco-lingual extension in the gingival region. To handle such a cavity for an inlay, using the burnishing method to secure the matrix, all that is necessary is to get a little additional separation, so that the matrix can be removed from the cavity toward the proximating tooth, and then through the separation that has been secured the inlay dropped into the space and then into the cavity, leaving the solid corners, buccal and lingual cusps, wtihout cutting them away.

Dr. F. E. Roach:

I merely rise to ask Dr. Orr to give us his method of obtaining this metal model in which he produces the sharp outlines of his impression. I have seen the model, and I would like to have him tell us how he does it. He has produced margins in Mellotte's metal such as I have never seen.

Dr. G. W. Dittmar:

I have made gold inlays by various methods, but when I wish to make a large restoration in a bicuspid or molar I always swage the matrix into a die and then reburnish it into the cavity in the tooth, believing I can get a more perfect adaptation in this way. I want to call attention to a little trick that I saw Dr. C. N. Thompson demonstrate which greatly assists in getting the matrix well adapted.

For instance, in a large mesio-occlusal cavity in an upper molar—having the swaged matrix in the cavity, cut an orange wood stick the proper length to place one end on a part of the matrix in the cavity and the other end on the occlusal surface of an opposing lower tooth and have the patient close enough to firmly hold the matrix in the cavity. Then having several orange wood sticks—four or five inches long with one end of each whittled to a desirable shape—take one that is indicated and with your hand mallet gently drive to position the portion of your matrix that happens not to be well adapted to the cavity. Anneal matrix often and use burnishers that are indicated so as to get every part of the matrix, especially that over the margins of the cavity, properly adapted. After you have a part of the matrix into position, if you think it necessary stiffen it with a little 22 K. or coin solder. I prefer the latter. Often a little crystal gold placed where you want it, and then solder, will be of assistance. Use anti-flux to prevent the solder from flowing where you do not want it. After a part is well adapted, shift the short orange wood stick to that part, and let the patient hold it, and proceed with the rest of the matrix in a similar manner.

Dr. Taggart illustrated his method, which in my judgment is the best possible way of getting a good impression. I have tried it, but I want to call attention to a little contrivance that Dr. Roach invented which greatly assists in taking impressions in difficult places. It is a cup made of brass, about 30 gauge, silverplated. It very much resembles, in shape, a cartridge for a seamless gold crown. In the end of this cup is a hole into which a suitable shaped handle snaps and rigidly holds the cup or cartridge. (This handle is easily adjusted or removed, and the cups come in various sizes.) Having the cavity prepared, you select a cup about the proper size, and, with a small curved metal shears, cut out as much of the cup as in your judgment is indicated, and with contouring plyers shape it up, so that it will carry the impression material to place in the cavity. Then get the modeling compound to the right consistency and carry it to position. The handle greatly assists in carrying the impression material to the cavity. Your view is less obstructed and the cup helps to get a better impression, and you can, as Dr. Taggart described, remove your first impression, trim, reseat, then unsnap the handle if you think it necessary, throw on a stream of warm water, and, with your fingers, gently cause pressure when the modeling compond is soft enough, then chill and remove. If not perfect, repeat the operation, but in this way you can get a very good impression.

Dr. Otto Hollinger:

Speaking of tricks, I saw a method described in one of the dental journals some time ago which came in handy the next day, and that is in taking the matrix out of the model, be it metal or cement, the material being so thin it sometimes has to be bent, and it so happened that there was a little undercut in this case I was setting which could be easily overcome by a stiff matrix, but not by a soft matrix, and having seen this scheme in print, I thought I would try it. It was to split the matrix in two parts; then the portion in which there was a slight undercut was retained in the matrix, and having the other side the proper way, it was easy to pull the matrix away. This breaking of the matrix in two was easily done. The amalgam or cement is saved by running a groove down, and, when it is hard, breaking it in two, holding the parts together firmly around the matrix by means of plaster, and the matrix can be easily taken out any time you like.

Dr. H. N. Orr:

In taking an impression I use gutta percha for impression material, investing that in plaster, and smoke it by burning gum camphor, which is very rich in carbon; then pour Mellotte's metal on this impression, and it seems that the carbon has a tendency to make the metal flow into all of the fine points of the impression. If the smoke fails to penetrate to all the parts of the impression, some of the carbon can be collected on a piece of mica and mixed with alcohol and brushed in with a small camel's hair brush. The models passed around have been used to burnish matrices in, and the margins are somewhat rounded, but when they came out of the impression you could see the marks of the stones I had used to shape the margins. In my hands gutta percha is much more accurate and more easily worked than modeling compound. I have used both, and I find that although modeling compound is probably just as good, and you can pour Mellotte's metal into it and get the same result as with gutta percha, nevertheless I can obtain more satisfactory results with gutta percha.

Dr. Knowles (closing the discussion on his part):

Dr. Johnson wants to know about mounting these stones. I get the small, round, black carborundum stones from the S. S. White Company. They are about one-eighth of an inch in diameter, with a good-sized hole into which to put the screw end of the mandril. I mount them with cement and let them stand over night to be sure the cement has thoroughly set. I trim them approximately with a file to the shapes I want. Of course, you can use a diamond stone trimmer, but since I have not a diamond I find a file works very nicely. There is another carborundum stone which is barrel-shaped; it is one-quarter of an inch long and about three-sixteenths of an inch in diameter. That shape is not useful as it is, but is especially so if properly ground down. I have passed around several that are ground, showing some of the many shapes that are useful. I want to say one word in regard to the advantage of swaging over that of burnishing, which I fear has not been fully appreciated in my paper.

As to the question of swaging and burnishing in cavities, some dentists get results one way and others another way. What we want are results, and if a man can obtain the best results by following a certain method, naturally that is what he is after.

Now, of course, the point is to get a matrix well adapted to a cavity. Dr. Taggart spoke of seeing men in clinics burnishing matrices to cavities who spend fifteen or twenty minutes rubbing and burnishing in really only one spot and not expeditiously accomplishing what they were after, owing to the difficulty of working in the mouth.

There are to me many advantages in the swaging method. For instance, with a tooth standing and the cervical margin well up between the teeth you have got the gum and often sensitive dentine to contend with. If you take an impression and can get the cavity reproduction in cement, which I know is possible, you can take that cement model cavity and turn it on its side, and have all the margins where you can reach them, and while it may still be difficult to burnish a matrix to that cavity you can with the swaging plunger effect very easily perfectly swage a matrix.

As to the cement model of the natural tooth I have passed around, if I take that model, which is a practical reproduction of the cavity, and is sufficiently hard to work on, it would be difficult for me to burnish, swage or adapt a matrix to it without the use of the rubber-ended plunger of the swaging outfit. I take the matrix, rub and partly adapt it with cotton, and finally swage and burnish it to place.

You can take the matrix out, and, if it distorts a little, put a little 22 K. gold solder in the bottom, swage it again, and force the distorted matrix back to place. If it is a difficult matrix to take out, by putting a small globule of pure gold in this 22 karat solder, when you swage it back, you have something to lift it out with. This is an important point in getting a stiffened matrix out of a cavity.

In regard to taking impressions, Dr. Taggart has demonstrated a very good way of doing it. For myself, however, I have had comparatively little trouble in taking impressions. These impressions, when thoroughly chilled with ice water, come out very easily, and are not very liable to bend, more often breaking with a clean, sharp break, which can be put together and held with wax.

I feel sure that one can turn out a great many fillings and do a great deal better work by swaging, provided his cement model is practically a correct reproduction of the cavity. I can generally satisfy myself that it is a correct reproduction of the cavity, and it is also a great deal easier on a patient to have the cavities filled with gutta percha instead of working on them to burnish matrices, with no need of seeing the patient until the inlay is ready to set. As some men do it takes considerable time to take an impression and partly adapt the matrix and then put it in the mouth again for final adaptation. I see no need of that, provided the cement model is an exact reproduction. I have made the inlay on the cement model I am now passing around, and not on the tooth itself.

We talk about taking time to do certain things. Time, of course, is an important element in all our work, but in our endeavor to get a good result half an hour or even two hours more are not important. The most perfect result is what we want, and I do not think that time is lost by taking impressions, etc., for by working a number of impressions along together I am sure that a great deal of time is saved over doing each individual case directly in the mouth. I feel that I would rather make an inlay over by taking a new impression than to burnish it and find it does not fit as well as I want it, and then have to go through the whole burnishing process in the mouth.

A question was asked in regard to certain details of laboratory work in making these inlays. A man could write pages on this subject if he went into the details of all these things. If a man has the principle, he usually works out his own details.

In regard to the cutting with carborundum stones, I myself spent fifty minutes in the chair the other day and had two large, sensitive cavities prepared and impressions taken, with a minimum amount of pain and time, for it probably would have taken six hours to have plugged them with gold.

The advantage of a stone over a bur is great, for besides cutting smoother and with less pain, it leaves the bases of cavity prepared as you want them, as the end of the stone is slightly rounded. You have the walls at nearly right angles, but the angles are not perfectly sharp, as a square-ended bur will leave them. That is a disadvantage in the cavity.

Dr. Moore (closing the discussion):

On account of the lateness of the hour and the fact that our papers have been so fully discussed, I have very little to add to what has already been said. I feel that you have heard sufficient concerning inlays for one evening, so I shall limit my remarks as much as possible.

Dr. Taggart spoke about the use of pins. He uses pins on the occlusal surfaces, I suppose, particularly where there is little tooth structure left to give anchorage by the dovetailing method. The same thing can be accomplished by grooving that part of the cavity and sinking a matrix into it. The adjustment of pins to a matrix is dangerous, and if we are not careful in removing matrix from the cavity we are liable to change the relation of pins and matrix. If you do not disarrange them then, there is a possibility of doing it later, especially in investing; and wherever possible their use should be avoided, except in a bridge abutment where a post might be used to advantage.

Dr. Bryant spoke about cutting out solder in order to produce the anatomical form. That is not necessary. You can apply solder so that it is not necessary to cut it with instruments or burs any further than to brighten the surface of it. That comes from the persistent use in the skillful handling of the blowpipe. In building cusps it is very essential to avoid overheating. If this is carefully observed there need not be any cutting or grooving with burs afterward.

He took exception to reseating an inlay when setting it. By reseating an inlay I mean this—raising the inlay a little after it has been forced into place, and pressing it back again, thus squeezing out more cement. By applying steady pressure on the inlay so much cement will come out, and no more. There are different ways of accomplishing this.

Dr. Orr refered to fusible metal for models. I have never seen a model made of fusible metal as sharp as the one that has been passed around. There are fusible metals which will bring out as sharp lines as amalgam or cement, and one especially that will answer nicely, gotten up for this purpose, but it has such an odor that no one would care to use it.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting of the Odontological Society of Chicago was held at the Wellington hotel, Chicago, Ill., on Tuesday evening, October 9, 1906, at 8 o'clock.

The president, Dr. J. E. Hinkins, occupied the chair.

Dr. J. G. Reid read a paper entitled "Roach's Moldable Porcelain."

DISCUSSION.

Dr. E. A. Royce:

The subject is too large for me. I am sorry that I cannot remember the paper as read, but that is an impossibility. I have been attempting to do some moldable porcelain work, and while I presume that Dr. Reid's assertion that anybody with moderate skill can acquire the art of using it is true, still I find that there is a good deal of knack about it; however, I shall persevere.

We are told that there is a way of saving half the gingival irritation that is caused by the gold crowns. That is certainly a great advance for the profession. For some time I have been studying this assertion, and I do not believe it is an over-estimate. This material seems to me to give amalgam another rap, and one that is very serious to it. Amalgam is good in its place, but the very places this porcelain will occupy are the places that the amalgam is not good, because of the difficulty of getting it to hold its form and keep its contact.

When moldable porcelain was first presented to this society I was somewhat skeptical, but I saw some work the other day when visiting Drs. Roach, Reid and Perry, that I would be very much pleased to duplicate. Dr. Reid said very little about the details of the working of the porcelain. I do not know that I can say anything about that except that it must receive proper attention in order to obtain anything like success. However, I expect to reap a sufficient harvest of benefit to pay me for what little work I am doing with it.

Dr. Truman W. Brophy:

Mr. President, I regret that you did not call on some one else to discuss this subject, because I don't know very much about it. When I first heard of the work Dr. Roach had been doing with this moldable porcelain, which I think was through Dr. Perry, I said at once that it was something I had been looking forward to for a number of years, because it would make it possible to restore to a condition of usefulness a certain class of teeth that had heretofore been removed or had had gold crowns put on them, in the adjustment of which the surrounding soft parts were injured to such an extent that they never could be restored to a normal condition. For that reason I believe that this moldable porcelain will fill a very important place in dental manipulation. It is not only capable of restoring to normal form the teeth, as has been shown by these specimens, but it will be manipulated with much more ease than many other materials. I am of the opinion that in time to come, when we will be able to get a color that will more nearly resemble the natural teeth, it will be a great improvement, though the color I do not consider objectionable in the place where it is used. True, it does not resemble the color of the teeth, but it is more nearly the color of the teeth than gold. I would like very much to see it more generally used and taught in the schools.

I have never had much confidence in amalgam, although I have seen some amalgam fillings that have lasted a good many years; yet I think it is a bad filling as a rule, because it will always shrink more or less. It may expand and it may change under certain conditions that no experimental work will enable the manipulators to overcome.

I think this porcelain can be used largely in broken-down teeth, and that it will become a fixed method of practice. It probably will be improved in color and form until it will enable us to accomplish better results in the preservation of the human teeth. I regard the introduction of this material as one of the most important steps in operative dentistry.

I would like to ask the essayist a question which he may answer when he closes the discussion. Will this material decompose in any way? It seems to me that either the margin of the tooth of the girl exhibited here this evening had broken down or decayed, or that there was a change in the structure of the porcelain at that point. There appeared to be a little groove around the margin of the tooth which probably did not exist at the time the porcelain inlay was made.

Dr. E. R. Carpenter:

Mr. President, I have absolutely nothing to add in the way of discussion of this interesting subject, but I do want to thank Dr. Reid for his intelligent presentation of the paper. It has inspired me with the first real interest that I have had in the subject. I have been afraid of it and somewhat skeptical, but with the success that he has demonstrated here tonight, I have decided to use it.

Dr. H. N. Orr:

I do not feel competent to discuss the subject under consideration, but wish to thank the essayist for the points I have gained from this excellent paper.

I procured some of the material at the state meeting at Springfield, and have been working with it more or less ever since, but have had trouble in separating it from the model. I am glad to learn that the material has been improved and this fault obviated.

I wish to take this occasion to thank the gentlemen of the society for the pleasure of being here. I consider it a great honor to be asked to attend a meeting of this society.

Senator Clark:

Mr. President, like Dr. Orr I consider this opportunity of being with you a privilege, one to be remembered with much pleasure. I hesitated about coming here, but begin to see now one of the reasons I was invited.

As manufacturers we are servants of you gentlemen, and to be successful we must be as skeptical as you are of all new things, being careful not to present anything for use until satisfied it is practical. We must keep pace with the times and make no mistakes.

It is interesting to note how close the members of your society are to one another, and I can see a great advantage in a number of men so well known to one another meeting together and expressing opinions, whatever they may be, for or against an article. It seems to me that is the way to get at the facts in the case, and such investigation cannot but be a factor in keeping the members of this society among the leaders in their profession. I am of the opinion that it may prove mutually profitable to allow the manufacturer to listen to your debate, so as to hear the honest opinion of the article marketed. In permitting this opportunity, no claim can be made that commercialism enters into the dental society meeting, as the manufacturer is anxious to be honest in his efforts on behalf of his customer. Chicago has the reputation of having in her midst some of the best dentists in the world. Discussions like these help to keep that reputation for Chicago.

We are today at rather a serious point in the manufacture of dental articles. A cheap plan is on foot for producing material in quantities at very low prices, without any regard for the quality of the goods. I am of the opinion that dentists do not want cheap goods. On the contrary, they are willing to pay for honest goods, but they want them, if they pay for them. I am of the opinion that in the future the best houses will be even more careful than they have been in the past about introducing new articles. I mean they will spend more time in investigation, in making practical tests, before attempting to market an article, and only present those goods having merit. I believe in conservative business methods and in offering only those things that will be satisfactory.

Doubtless you are all aware that I am marketing Dr. Roach's porcelain, and it may interest you to know that I have an appointment this week with one of the proprietors of a foreign company, the largest dental manufacturing concern in the world. I believe his main object in coming to see me and coming to Chicago is to investigate Roach's Moldable Porcelain and ascertain if I have made the necessary investigation before placing this article on the market, perhaps anticipating the handling of the product abroad.

Some time ago Chicago was not honest in granting diplomas and credentials. At one time I had the pleasure of attending a dental meeting in Dresden, Germany, and heard a discussion on the "American Dentist," and there was a good deal said at that meeting with reference to the methods carried on in Chicago. We have corrected these evils. The new dental law, which I had the pleasure of presenting, has helped to bring this about.

I hope the presentation of this moldable porcelain will result in good for the dental profession and for humanity.

Dr. C. S. Case:

It is a great pleasure to watch the progress and development of the different ideas and methods that come into the dental profession. I have watched with considerable pride and pleasure the development of porcelain as a filling material. I do not know that I understand the difference between this moldable porcelain and the ordinary material as to its advantages in restoring the buccal teeth, but there is one thing that strikes me very forcibly, and that is that if it is possible, by the use of this material, the buccal teeth may be saved without the necessity of crowning them, that it is certainly, as Dr. Royce has said, a sufficient advantage in itself. If the cutting away of the gingival margin of the enamel can be avoided, this will be one of the greatest possible advantages.

I think that Dr. Roach deserves a great deal of credit, and I wish also to compliment Dr. Reid upon his paper.

Dr. L. L. Davis:

Mr. President, I think this is about the third time that we have had this subject presented to the Odontological Society. We had a paper by Dr. Perry and later a presentation of the subject and the display of a furnace by Dr. Roach himself. Now we have Dr. Reid giving us some more ideas on the subject. The first specimens that I saw of the work the color was so crude, the inlays looked so spotted and mottled in appearance, that I was not favorably impressed. These specimens, however, look very much better. It seems a very easy manner of putting in an inlay. Dr. Royce has voiced the idea that it is not quite so easy as they tell it. I have thought many times that I would go into the matter, and I feel more like it at present than ever before.

There is one thing Dr. Reid said in which I can heartily support him, and that is that there are too many teeth crowned that could be saved. I am not quite ready to discard the use of amalgam where there is a portion of the tooth lost. I see quite frequently gold caps that look as if they had been put on to get a few more dollars out of the patient. That makes me ashamed of my profession. A man who will slice off enough of a tooth so that he can slide on a gold band and charge six or eight or ten dollars where he would expect to get only a couple of dollars for an amalgam filling is a disgrace to the profession.

This material will be useful where there is a large restoration, and instead of using a gold inlay, something that more nearly approaches the color of the teeth can be used. I don't see where it can be used instead of amalgam. A person that would pay two dollars for an amalgam filling would not pay you what a porcelain inlay is worth. Where you would ordinarily put in a gold inlay or an immense gold filling it would be very serviceable. I am not criticising this material, and it has its place, but I do not believe it can be used in every case.

Dr. E. J. Perry:

Dr. Orr and Dr. Royce have not used, so far as I know, this latest material. Dr. Brophy spoke of the growth and development of it and expressed the hope that we might have a material that is translucent.

Perhaps that is one of the possibilities that may be realized in the future. That inlay has come to stay and goes into the tooth to stay because it is the proper thing. I would rather dispense with almost anything else I have. Any one with sufficient practice can carve it, and a child can bake it. The reason I like it is because I can handle it, and the reason I think it will be universally used is because I can use it. I would suggest to Dr. Brophy that he invite Dr. Roach or myself to explain with great care to his class this winter the handling of this subject. It should be a part of their instruction.

On Saturday I made a large restoration of a front tooth with translucent porcelain. It was a pulpless tooth and I had a deep box-like chamber. I could not by any possible means have gotten the translucent porcelain into that box. I filled the box with plaster of paris so that I could burnish my platinum into it, and then I made my inlay and finished it, stripping off the platinum. I cut the plaster out and got that stem of porcelain away down into my pulp chamber quite a distance without any change whatever in the translucency. It is valuable because anybody can do it, and it takes the place of amalgam.

I am surprised that Dr. Davis can make a contention for amalgam. Amalgam has no place in connection with this substance at all. It changes in form, and it will only do where the patient is too poor to pay for porcelain. Whether it is expensive is not the point. It is a question as to whether it is best or not. This color is not objectionably conspicuous even in places where it will be seen. When you get interested in the work it becomes fascinating, and I contended at Springfield that inlay work had done more to teach the profession about cavity formation than all that has been said about extension for prevention.

Dr. C. N. Johnson:

I am very much pleased with Dr. Reid's paper tonight, particularly with regard to the very clear and concise manner in which the subject has been presented to us. It has renewed my interest in the subject. One thing that has impressed me more than any other is the very great change that has been made in the character of this material since it was first introduced to the profession. I think that was vividly noticeable in the specimens we saw this evening. There is a difference in the density and texture of the material.

I would ask the same question that Dr. Brophy did regarding the changing of the porcelain.

I never let an opportunity pass without saying just one word with regard to the possibility of saving very many teeth by fillings and inlays that have been crowned in the past. There has been more disgrace and injury heaped upon the profession by improper crown work, as Dr. Davis has said, than by anything else. It seems to me that this method of restoration by moldable porcelain or semi-crowns, as the case may be, will result in very much better and more hygienic practice than crown work in the past. It is impossible to have gum tissue remain as healthy when encircled by a band around the tooth as it will around a filling that is restored even with the margin of the cavity.

We ought not to lose any opportunity to encourage the young men to abstain from practicing crown work so extensively, and to adopt some more modern method.

I would like to ask a question or two: Is this moldable porcelain stronger in a given bulk than the ordinary translucent porcelain?

Dr. Reid:

Yes, at least three or four times as strong.

Dr. Johnson:

I wanted that brought out because it will recommend this material very strongly to those in the profession who have been in the habit of using translucent porcelain every place where they could put it, thereby bringing a beautiful class of work into disrepute. I am looking always for some method that will not be complicated, and one that the general profession will be able to utilize, and I raise the question if it is not possible by careful manipulation to fit this porcelain to cavities in the tooth and fuse it and work it that way instead of making these models?

Dr. Reid:

It can be done, but in view of the fact that the model can be made so easily and quickly, I think better results would be obtained with the model. I think one would hardly be justified in doing it in the mouth.

Dr. Johnson:

In fitting a matrix to a cavity for an ordinary inlay, if we become expert, we can fit the matrix while you are taking the impression. If that is so, it saves a great deal of time.

I very much hope, Mr. President, that those who are working with this material will take up these different points and see if it is not possible to simplify the technique. I admire very greatly the beautiful technique that we have seen here, but it becomes very expensive to our patients. The work is so beautiful that if we can simplify it and bring it into general use, it will be better for the people, and result in a higher grade of work in general practice.

Dr. George W. Cook:

I have attempted to use this material a number of times, and have made a number of fillings, and agree with Dr. Perry that it is especially useful where crowns were formerly used. The time is coming when I think we will dispense with bands for crowns in the majority of cases. I believe Dr. Roach himself would say that this material has not reached an ideal state of perfection, but the improvement that has been made is easily seen. When the material was first brought out I think it was quite impossible for any one to work it with any degree of satisfaction until they had worked up at least a couple of barrels, and most people having the patience to dispose of that much material at $2 per ounce will appreciate the fact that it is made in a form that can be easily manipulated as is done now. One of the most important things in regard to this porcelain has not been mentioned, and that is that in the chewing and masticating of food this material is far better than any other material you can put into the mouth. Sometimes we might say that it would surpass in a great many instances the natural enamel of the teeth in gripping the food. Those of us who have had experience with gold crowns know that that is one of the great objections.

There are some things that I think Dr. Roach has recently discovered that will improve the color, and also cause the material to retain its color longer in the mouth. It seems to me that there has been a tendency to change of color in the mouth. I do not know that I could say what caused it, because I did say that once and found out the next day that I was mistaken, so I will refrain from saying anything on that subject.

The method of procedure is so simple that as you see Dr. Reid manipulate it you would think you could mold it into a cavity as Dr. Johnson has said, without taking any impression for a model. I think you will find that a great many dentists will be using it that way, though I question whether it will be so valuable.

Dr. F. E. Roach:

Mr. President, I hardly feel that I should be called upon to discuss this paper, because it is natural that I should be biased in my opinions. However, I am expected to know more about the material possibly than any one else, and for that reason might be permitted to say something in regard to it.

In the first place, I want to state my position in regard to this material and the purposes for which it is intended. I do not expect that it will supplant other materials for even a certain class of cases. I do not expect it will take the place of gold crowns entirely nor amalgam fillings. While I believe there is a place for this new material, I want it distinctly understood that I do not advocate its promiscuous use, but would recommend it under its indications. Dr. Reid has stated, to my mind, its greatest field, and that is taking the place of the gold crown, which has been so greatly abused. As Dr. Johnson has so forcibly stated, it is my belief that there is no part of dental practice that has been so much abused as the use of gold crowns, and it is for this purpose I believe this material is most indicated. I try to be conservative in my statements as to its indications. I have no doubt used it more extensively than I would were it not that I was anxious to develop the material and try it out in various cases. It would not be a surprise to me if possibly many dentists would see some very poor work from my hands during its developing stage. I have had the conviction that there is a need for some such material, and it is certainly very gratifying to me to have the profession so indulgent and to have their support while perfecting this material.

Dr. Johnson asked a question in regard to the disintegration of the material. I do not think there is any possibility of that taking place. It is not a cement. It is fused and becomes a vitreous mass, and from all the experiments I have made with it clinically as well as in the laboratory, it does not show any signs whatever of disintegration. I do not feel that there is any ground for questioning that feature of the material.

As to the colors, I have spoken of this a number of times, and I know that it is a disappointment to many when they come to look at the material, as they see it out of mouth and as they may see it in some cases in the mouth, but when they come to look upon it in a common-sense, practical way, the color as it stands in the mouth, as you will see it by looking into the mouth, will so nearly match the majority of teeth that though it be opaque and is not the same color, it will harmonize with the majority of teeth as well as most translucent porcelain in similar positions. I make that statement without fear of contradiction. I do not believe that the question of color will be a very serious one. However, the material can be and will be made in several colors, greenish yellows and grays and some such colors that may more nearly approach the colors of the natural teeth. The recent formula does not show any indications of what we might call apparently a deposit that was seen in the use of the older formula. I feel that that feature has been overcome entirely.

There is much that I might say in regard to cavity preparation for this material, but I feel that that is not necessary, as that feature has been discussed very thoroughly by Dr. Perry and Dr. Reid. I would like to speak in regard to the question raised by Dr. Johnson in regard to the practicability of molding the material directly in the mouth. I do not believe that the technique of constructing these inlays is so difficult or tedious that it becomes a burden at all. I think any one may readily take an impression of almost any cavity in the mouth, and I want to take issue with you, Doctor, in regard to the taking of impressions. I believe that the model is the proper way to manipulate the material. There are a great many accessible cavities that can be kept dry for a reasonable length of time, and it can be done much more quickly by molding directly to the cavity. In the class of cases where it is indicated, I think it is more desirable to make a model. You merely prepare the cavity, take an impression and dismiss the patient. Then the model may be made in several ways. I have been using an amalgam model or White's new inlay material, which gives a good workable model. If your model is not perfect, the final fitting may be very advantageously made in the mouth. The fitting is done directly to the cavity, and the questionable feature of the accuracy of the model is eliminated.

The impression has gotten out that this material is tricky and requires a great deal of skill and technique, and that working it is cumbersome. It is like every other material or method of practice we undertake. If we learn a method or system of practice, then it is easy, but when we consider the time we have put in in learning to manipulate gold and translucent porcelain, the technique of cavity formation and the manipulation of other porcelain, we will realize that there is something to learn about this material, but when once mastered it becomes child's play in comparison with the manipulation of translucent porcelain.

I want to thank this society for the privilege of meeting with you again. I certainly feel that I have been honored, and I appreciate very much having met with you this second time.

Dr. Carpenter:

Have you ever tried backing translucent porcelain on this?

Dr. Roach:

That is, I think, entirely impracticable. The expansion and contraction of the material is so different that the translucent porcelain would check. It will fuse to it seemingly as well as it does to other porcelain, but it crazes.

Dr. Brophy:

Take the lower molar, where a buccal cavity extends over on to the occlusal surface, will this material have enough strength to form that occlusal surface and stand up and do its work?

Dr. Roach:

I have made a great many of those. I have used this material almost everywhere in the mouth and subjected it to all kinds of strain, and I have yet to have my first case come back broken. There is no question about the greater strength of the material. It has an ivory-like toughness that is remarkable.

Dr. E. J. Perry:

It is not generally known that the S. S. White Company have placed upon the market a new inlay material. It seems to be a compound in which sulphur is used, and it fuses or melts at such a low temperature that you can pour it on the modeling compound, making a little cup for it easily in five minutes after the impression is taken off the model. You can make it quicker on the model than you can in the mouth. In regard to Dr. Johnson's objection in cavities between the teeth which you cannot get an impression of with a modeling compound, it just simply shows this and nothing more, that the cavity is not prepared right.

Dr. Johnson:

The contention I make is this: That you can fit a matrix to a cavity that is properly prepared that you cannot take an impression of because of the surroundings.

Dr. Perry:

You do not fit the matrix in this case. You can take an impression of the cavity, make a model of it and fit the inlay almost while you are making the matrix. I disagree with Dr. Roach and Dr. Taggart that you can fit a matrix in these very difficult cases on the distal side of molar teeth easily and quickly. It is not easy. I can take an impression and make one of those models with that inlay model in less time almost than you can say Jack Robinson.

Dr. J. E. Hinkins:

It seems to me that this substance has come to stay and is something very much needed in the profession, although like Dr. Johnson and others I have not used it because we cannot work along the same lines in this great profession of ours. These gentlemen seem to be perfectly competent to develop this material to its fullest capacity, and I have not experimented with it.

I have objected to it somewhat on account of the color, but the samples that have been passed around tonight look very good. I hope the work will be carried on further and that I may be able to apply it in some of these simple cases.

Another thing that is not quite germane to the subject, and I do not know whether I am mercenary or not, but what work I have done seems to require about as much time as porcelain, and I have reached that stage of life where I don't care to work for nothing. I can put a couple of hours on a porcelain inlay and benefit my patient and also myself, but this line of work is limited to the posterior surfaces of the second bicuspid and further back in the mouth.

Dr. J. G. Reid, in closing the discussion, said:

There is not much more I can add to what has been said. Dr. Roach answered Dr. Brophy's question. I can say that there is absolutely no change. The materials composing it when fused are incapable of becoming disintegrated by anything that is found in the mouth. It is composed of indestructible materials when fused.

The condition you observed in the young lady's mouth was simply a line of discoloration, and, as was mentioned by Dr. Roach, you will bear in mind that when this work was done the material was in its infancy. That work was done under great difficulty, and before I arrived at anything like success I passed through many trials, but so eager was I and such belief did I have in the material that I kept at it until I obtained results. I do not present it as an artistic piece of work, but as something that is useful to the patient and will be for a good many years. If you had seen that mouth before I did the work you would see a very remarkable change.

I brought the model to illustrate the extent of the restoration which can be made. This has been in use about four months, and there is no man living that can put a gold crown on that tooth that would be as useful and healthy as the conditions now exist. In that cavity there is almost a decay through the bifurcation and the margin of that cavity was below the alveolar process, and yet that has no post in it. There is ample integrity in the mesial surface of this tooth to securely and firmly lock it. There is sufficient bulk in this porcelain to make it impossible to break it. The tissues about the tooth are perfectly healthy and the inlay is smooth and the material compatible with the surrounding tissues. This is true in any position where it is placed about the tissues.

The color problem does not cut any figure when this material is placed where it is intended to be used. That color or any other color in the mouth is far superior to the shining gold crown for mastication of food. Its surface is more perfect, if anything, than that of the natural tooth. On the gold crowns the food slips all around like a man sliding on ice, but with this material it will stay there and grind. A gold crown it not fit to chew on; you can mash the food but you cannot grind it. Now, I have in my own mouth one of those inlays that I grind on and I know that it is very satisfactory. If there is one thing that has ever been a detriment to the inlay business it has been this question of color. Today it is an everlasting and constant quibble as to colors. I have seen many porcelain inlays, but I have never seen one yet that is not almost as conspicuous as gold fillings. If you had never had but one color in porcelain inlay work, I believe it would have been an advantage, and if they will keep the colors out of this proposition they will get along beautifully with it.

Dr. Johnson has made it appear by his interrogatories that the technique is difficult. It is true that there are a lot of models on that card. As one looks at it he would think that he could never do it, but the technique of this is simple. If I can do it, I am sure that the average dentist can do it. The technique in doing this work is easy. I say that positively, and the more you do it the easier it becomes. The making of a model with amalgam is easy. You can have a dozen of these laying on your labortatory table and can pick them up at odd moments when you do not have anything else to do.

Dr. Johnson:

How long will it take you ordinarily from the time the cavity is prepared until the inlay is ready to set?

Dr. Reid:

You can take an impression, make a model, make your inlay and set it in the mouth in less than an hour. You cannot do that with porcelain to save your life in less than an hour, but that is not the point I am making. I have confined myself to one thought in this paper, and I have not uttered anything in favor of the material except for one purpose. My use of it is confined absolutely to those restorations, and I do not go outside of that. I use a great deal of amalgam in my practice, but you cannot use amalgam for what this is intended for. You cannot put amalgam in those restorations and get any usefulness out of it. This material can be utilized where a crown could not be put on, and anything that we can do that will prohibit and limit the use of crown work is a step in advance. That is the only point I made in the paper and the only one I expected to make, and I started out by quoting from that very able writer on the question of the integrity of the gingival border.

THE AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT BERLIN, GERMANY, AUGUST, 1906.

DISCUSSION OF DR. HARLAN'S PAPER, "OBSERVATIONS ON THE RETENTION OF PULPLESS TEETH IN THE JAWS."

Dr. W. J. Younger

Asked whether Dr. Harlan would make a distinction between a tooth with no pulp and a tooth with a diseased pulp.

Dr. Bödecker

Asked how badly a root must be split before Dr. Harlan gave up the hope of saving it.

Dr. N. S. Jenkins

Said he was no great friend of the radical operation of extraction, his experience convincing him that there were some seemingly hopeless cases which, if one had patience, might eventually be saved for nearly a lifetime of usefulness. There were perplexing and troublesome cases in every practice, but under certain conditions, even where crooked roots and pulp stones existed, it was possible still to remove almost every particle of the pulp and thus save such a tooth, even though it was not possible to fill it with perfect accuracy to the end of the root. It was better not to despair even of the complicated and difficult case where pain had been long continued, for one often surprised oneself by a brilliant and successful cure. But there was one class of hopeless teeth to which Dr. Harlan had but incidentally referred, teeth where a certain degree of absorption at the end of the root had occurred, leaving the root as sharp as the point of a needle. He knew of no way to save those teeth. One might have very great patience with them, but usually they were so far denuded of alveolar attachment that amputation was impractical; moreover, he did not care very much for amputation of a diseased root under any circumstances.

Dr. Younger

Said that for the hopless cases Dr. Jenkins spoke of there was a remedy. Four years ago a lady in Cairo called him in to examine the teeth. The right upper central had dropped out; it was not only absorbed at the apex but had also a diseased pulp. He removed the diseased pulp and disinfected the root, filled it, polished off the absorbed portion of the end of the root and put the tooth back. That tooth was doing good service when he saw the lady six weeks ago, and that was only one of a number of cases.

Dr. Snow Smith

Asked what intervals Dr. Harlan allowed from the time he discovered an abscess or other conditions before deciding to extract.

A Member

Asked Dr. Younger how he would manage a lower second or third molar with an absorbed root.

Dr. Younger

Said he would deal with it in the same way.

Dr. Black

Said the subject was of great interest and importance. Pulpless teeth were almost always lame teeth at best. For many years he had been testing the power of the bite of pulpless teeth as compared with teeth that were in a normal condition and he had discovered they were always lame teeth whatever was done to them. There was a sensitiveness of the peridental membrane which was persistent, although the teeth would be useful in chewing food. If they were additionally lamed by the presence of an abscess they were apt to be a nuisance rather than a comfort. Yet there were many teeth with abscesses at the root exuding pus continually in a small amount that were really useful teeth and it would be doing the patient a wrong to extract such a tooth. On the whole, each man would have to use his judgment as to the degree of usefulness of any particular tooth that had lost its pulp. Of course there was a range of differences in the value of the teeth, from almost perfect usefulness to a perfect nuisance. There were no teeth in which fermentation had occurred in an open pulp chamber that was ever perfect afterward, although such a tooth might do service, and it would be well to retain it. A tooth from which one removed the pulp and never allowed anything to go into the tooth except what was beneficial, finally filling the pulp chamber, the peridental membrane would usually remain comparatively good; whereas if fermentation had been allowed to occur in the pulp chamber it would lame that tooth for ever, for the dentine would absorb the material and it would be a source of irritation. One thing with regard to living pulps struck him as being very bad, namely, the tendency in the profession to remove pulps for young people, whereas they might be retained for some years and then removed to very much better advantage. The usefulness of the tooth would depend, up to twenty, on the age at which that pulp was removed. The procedure of cutting off teeth to make a better appearance, or removing teeth because it caused a little trouble to retain them, seemed to him a very wrong thing. If teeth that had been extracted were examined closely it would be found that a great many of them had been supporting for two or three years or longer a serumal calculus at the apex of the root, and those were impossible of cure unless the calculus was removed or a portion of the end of the root amputated. He had amputated many of them where he had had an opportunity of following the matter up, and he did not think much of it; there was a cure, but they were very lame teeth. One thing he insisted on above all others was that the teeth to be retained in the mouth were teeth the patient could use without pain. He thought more of the ability to chew food without pain and without irritation than of almost any other thing. The patient who could take food of any kind in the mouth and dash his teeth through it was in better condition, although there might be few teeth to chew food with, than the patient with a full mouth of teeth who was constantly suffering whenever he bit upon something hard. The health of the mouth depended largely upon the ability to use the teeth with vigor. When patients came to him with teeth out of condition and causing pain when chewing food he told them they had to go into training. He tried their bite and they might not be able to register more than 30 or 40 pounds. Before he was satisfied with such a case he brought the register up to 150 pounds at least, and often that was done in a few months by removing some teeth that were irreparable. He had had the satisfaction often of bringing the register up from 40 pounds to 200 pounds within six months.

Dr. Younger

Asked how many pounds pressure artificial teeth would bear.

Dr. Black

Said very few cases would bear more than 40 pounds and then they broke off. Occasionally a case was found which bore very much more, but they were only occasional. He had a filled upper central and he was able to break the tooth off very rapidly. He had broken two since he had been in Berlin and 40 pounds was the best he could do. He could chew a mutton chop very well, but a beefsteak was rather a trial.

Dr. William Hirschfeld

Said a problem had been touched upon which was very important, namely, the conservation of the pulp in young teeth. While he perfectly admitted the importance of the problem, he should like to ask how to combine comfort in eating and trying to keep a pulp which had been exposed for some time. He wanted advice how to keep the pulps in young teeth which most dentists found it very difficult to save.

Dr. Black

Said he would certainly not undertake to do the impossible. If it was impossible to save the pulp even for a time he would do the next best thing, which might be the removal of the pulp or the removal of the tooth. It was necessary to use judgment. But of all things his advice was not to allow patients to go on with continual pain when they went to the table.

Dr. Aguilar

Said that Dr. Harlan had spoken as a matter of course of the extraction of the pulp as treatment for pyorrhea as an everyday occurrence with him in his practice, and he was very anxious to know if that was a good procedure. Dr. Harlan also spoke of the treatment of perforated roots with creosoted wood and he desired further explanation upon that point. Also he wished to hear his opinion with regard to the extraction of the temporary teeth when they were pulpless.

Dr. Harlan,

In reply, in answer to Dr. Younger's question as to whether he would make any distinction between a pulpless tooth and one containing a diseased pulp, said he would soon make it a pulpless tooth by removing the diseased pulp and he did not think there would be any exception.

Dr. Younger

Pointed out that Dr. Harlan had not drawn a distinction between a tooth with the pulp extracted and the tooth where the pulp was in bad condition.

Dr. Harlan

Said that all teeth having had pulps recently extracted should be retained, and pointed out that Dr. Black himself said that even those teeth were lame. The reason he wrote the paper was because he found so many people in reaching a certain age were continually suffering from pulpless teeth, even though they had well adjusted crowns or had been held in position by a splint. It was a question in his mind whether it was not better to have fewer teeth to chew food with properly and thoroughly than to have many teeth and be unable to use them for mastication. He had had two or three pulpless teeth in his own mouth and although he was a moderately robust man those teeth at times were troublesome, even though the roots were well filled. Dr. Bödecker had asked where he would draw the line with a split root. A split root was always an infected root to begin with and it was only rarely that it was possible to bring the parts perfectly together that the tooth would serve the purpose of mastication It was quite true, as Dr. Jenkins had said, that it was possible to coax certain teeth, but in writing the paper he went over several skeleton teeth that he had had finally to extract. If a tooth was giving trouble all the time it was being treated and broke out again in a few months then it was love's labor lost. With regard to amputating roots, he commenced to amputate roots of teeth as early as 1876, and he had had occasion for twenty-five years to observe roots that had been amputated, and there were very few indeed that would last longer than four or five years, and most of them were lame during the whole of that period. The amputation of a root and the amputation of one root of a double rooted tooth were two different propositions. In the one case the cut was through the alveolar process and the apex was amputated and the end of the root commenced to be turned down sooner or later. Occasionally there would be a tooth that would last ten years, but that was an exception. With regard to Dr. Aguilar's questions, in the perforated roots his first preference was paraffin and he had said that the perforations might be filled with paraffin or lead or gutta percha or creosoted wood. He did not use creosoted wood, but some people did. He did not think there would be any particular objection to using it, provided it did not project into the soft tissues and become a source of irritation. With regard to the destruction of the pulp to divert nutrition to the pericementum. that was not a general practice; it was only where the pericementum had been lost to such an extent that it would be probably better to remove the pulp and even keep the moderately lame tooth for a certain period, and was not to be considered as a regular practice. With regard to the extraction of pulps in young subjects, he had said in the paper that all deciduous pulpless teeth that prevented the emergence of successors should be extracted, and that he thought covered the question. With reference to the retention of a live pulp in a tooth in a young person he agreed with Dr. Black that the impossible should not be attempted. There were accidental exposures of the pulp with an excavator or bur where the pulp might possibly be retained for a considerable period, and it was very desirable sometimes to retain a live pulp in a tooth even though it had been irritated and inflamed, but even then there was a lame tooth and a lame tooth was a constant annoyance to the possessor. He had had so many cases in recent years that he had come to the conclusion that it was a mistake to attempt to save teeth that failed to be useful to the patient.

Dr. Black

Asked Dr. Harlan to define more distinctly what he would regard as a pulpless deciduous tooth that would interfere with the eruption of the permanent tooth.

Dr. Harlan

Said that sometimes the pulp of a deciduous tooth died before there was any absorption of the root and often those roots were not turned down as rapidly as those containing live pulps. Therefore if a deciduous tooth was a mechanical obstruction, or if it caused the permanent tooth to go outside or inside the line so as to make an irregularity, it would be very much better to take that out and let the tooth come into its proper place.

DISCUSSION OF PAPER BY DR. HIRSCHFELD ON "THE CONSERVATION OF THE BICUSPIDS."

Dr. N. S. Jenkins

Said there was a difference between European and American practice caused by the various nationalities who came under the care of a European practitioner. Temperament, character and training were different in every land and a man who practiced a system in one country would find when he came to have patients from other nationalities that he had to adapt himself to the patients, because he could not make the patients adapt themselves to him. Those who practiced in Europe possessed one advantage in not having patients of anything like the same generality of type which was common to American practice. One of the greatest advantages was that there were many European people who refused to be disfigured for the pleasure of the operating dentist. The preservation of the teeth and particularly the bicuspid teeth was a paramount question; they must be preserved at all hazards, and there were ways in which they could be preserved so as not to disfigure the mouth. In front of the second molar there was absolutely no excuse for the gleam of gold or the stain of amalgam. If those metals had to be used they could be used in such a way that they did not offend. It was needless to refer to what those methods were. There were, as Dr. Hirschfeld had suggested, methods of employing cement as a lining and using amalgam or gold. It was the duty of the dentist to preserve the teeth with the materials he had without disfiguring the patient.

Dr. W. Sachs

Said it was a well-known fact that the young dentist leaving college was very well satisfied with the work he was doing, believing it would stand for a lifetime, but the old practitioner knew better, for the older he grew the more experience he had. Even the most perfect work would fail very often in a few years. That was very much the case in all efforts at saving bicuspids and molars which had contact on the proximal surfaces. Porcelain fillings would preserve the teeth beautifully in such cases where it was possible to protect the proximal gum tissue in building up the teeth into natural shape with a perfect contact point. His own plan was as follows. Taking as an example the mesial surface of the second bicuspid, he made a porcelain filling, building out the point of contact and inserting the filling. He preferred first to make the porcelain filling for the second bicuspid, insert it, and then put in the distal surface of the first bicuspid, or make a gold filling which could be built out very nicely so that the contact point would be on the porcelain and the gold. That would preserve the teeth and make a perfect filling. The saving of such teeth depended on the contact point.

Dr. N. S. Jenkins,

In criticism of what Dr. Sachs had stated, said contact points in proximal cavities of bicuspids could be made with greater perfection in porcelain in the hands of a master than with any other material at the command of the dentist, and it was also of the very greatest advantage in cases of extension for prevention. What had been discovered long ago empirically had been explained in its scientific aspects by Dr. Black, but for many years European dentists had been accustomed to use the same formation cavity and the same methods of preventing subsequent decay which Dr. Black had so clearly presented.

Dr. Bogue

Agreed with Dr. Sachs with regard to the method of treating bicuspid teeth. When it was not possible to get at the posterior side of the first bicuspid with porcelain filling the anterior side of the posterior teeth could be treated and then the posterior side of the anterior teeth with the other filling. With regard to Dr. Jenkins' remarks, he thought the Doctor had forgotten that as time went on the jaws were coming closer together, and therefore it was necessary to leave the porcelain fillings a little short of contact to provide for increasing years.

Dr. W. M. Cooper

Said he was glad that point had been brought out, as he had had trouble from time to time. Porcelain fillings he had thought perfect he had found to chip or break after two years. He had since made it his practice when his patients came from time to time for examinations and cleansing to test the mouth all the way round and he frequently found he had to polish down porcelain fillings a second time.

Dr. Jenkins

Said he also found that was the case occasionally.

Dr. Bogue

Said that a number of years ago a gentleman came into his office in Paris with his wife to find fault, declaring that he (Dr. Bogue) was so in love with his profession that he insisted on cutting away unduly the margins of the cavities and exposing a large portion to fill up again. The lady had been under his care for sixteen or seventeen years and had had many fillings, and he put her into the chair and allowed her husband to point out filling after filling where he said too much had been cut away. Every one of those fillings illustrated Dr. Black's theory; every one of the fillings was from twelve to eighteen years old and the extension that had taken place was not done for prevention, but had done itself. Being so extended, the fillings had lasted, but the more modern fillings that had been put in at a later date needed doing over again. This was his first lesson in the theory of extension for prevention.

Dr. Sandbloom (Christiania)

Said he had been particularly struck by the fact that the gingival margin would not tolerate gold. He was a pupil of Dr. Black and the Doctor had pointed out in a class a very important thing in filling cavities, namely, the direction of the enamel rods. A good deal of the failure on the gingival margin depended on the fact that the margin had not been prepared properly, having due regard to the direction of the enamel rods, or perhaps from the fact that what Dr. Black called the surface angle had not been properly cut off. He thought it quite possible to condense gold, either cohesive or non-cohesive, if it were done properly. Dr. Black's teaching was to use non-cohesive gold at the gingival margin, to build the gold out in a triangle, and then lay on a thin layer of gold and press it with hand pressure, then condense another pellet of gold inside without going over the margin, and then a second pellet over the margin, and in that way it was possible to condense gold and adapt it perfectly to the gingival margin. Most of the failures he had had in his practice had been due to not condensing the gold properly to the margin. It was something new to hear that the interproximal gum tissue would not tolerate gold, and he thought the cause of that tissue getting away from the margin of the filling was due to not having made proper contact. Food would get in and there would be a center for recurrence of decay.

DR. HIRSCHFELD

Agreed with Dr. Jenkins as to the possibility of constructing porcelain filling in such a way as to produce a beautiful point of contact, and since that was possible he did not see why one of the two bicuspid cavities should be filled with a metal filling. With regard to Dr. Bogue's case of the lady, he felt sure that metal fillings would have failed in the same way. He could emphasize what Dr. Black had said, that it was not only necessary to study the profession, but the aptitude for the profession.

DISCUSSION OF DR. FARMER'S PAPER, "NOTES ON A CASE OF TRISMUS, AND A CASE OF ABSCESS IN THE PALATE."

DR. GEORGE NORTHCROFT

Thought the society must feel grateful to Dr. Farmer for bringing the cases forward, as such cases brought home very closely the difficulties with which sometimes the dental surgeon had to contend. He was inclined to disagree with Dr. Farmer with regard to the buried third molar. Only a microscopical examination of the root could decide the point, but he certainly imagined from the look of the tooth that it was true cementum and not bone. From the specimens also he thought it was undoubtedly the fact that the mandibular nerve and artery passed through the foramen. With regard to the other case, he could not think it possible that Dr. Farmer meant the abscess had displaced the bicuspids, because one could scarcely conceive of fluid forcing the teeth out. He imagined what really happened was that the gum round the bicuspids on the parietal side became hypertrophied from the constant recurrence of the abscess and it was the gum that pushed the bicuspids out of place. Perhaps it came to the same thing, but in his mind he differentiated between the two.

Dr. T. W. Brophy

Considered the paper was interesting from several points of view. In the first place it was a paper based on careful diagnosis, and in the second place it appealed to a practitioner of dentistry because it explained away some of the conditions that were oftentimes found very obscure and difficult in accounting for the trouble that existed. It was a habit with him whenever a patient came with a condition such as Dr. Farmer first described, after having made use of all the means at his command in diagnosis, to have a skiagraph made with a view of solving the condition, and the skiagraph was often of very valuable assistance in reaching a conclusion. Within the last few years he had had a number of cases similar to that described and in one or two had found it absolutely impossible to determine whether a third molar was malposed or the cause of irritation, and the skiagraph revealed the presence of the tooth, if it was there, and if nothing was found treatment had to proceed on other lines. Very frequently third molar teeth were found in a wrong position, possibly taking a course backward and upward so as to come in contact with the nerve and becoming a source of pain and demanding surgical interference. He did not quite know how Dr. Farmer proceeded to remove the tooth or determine the cause of the trouble, but in such cases he himself opened the mouth wide and made an incision along the external surface of the ramus, and having exposed the bone proceeded with a strong bur made after the fashion of Younger's bur, a bur designed for cutting sockets for the implantation of teeth and one which did not clog easily and would continue to cut. Having exposed the tooth, he cut around it so as to be able to lift it out of its place. The hemorrhage encountered was what might be expected in dividing the maxillary artery, but it could be arrested by plugging. Before leaving the subject of irritation set up by unerupted teeth, he should like to say that in his judgment many of the cases of facial neuralgia that had been under treatment for many years by the most expert neurologists had their origin in a tooth, not necessarily a malposed tooth, but a tooth with disease. It was not always necessary that those teeth should be removed in order to relieve the pain. He hoped Dr. Farmer would publish a monograph on the diseases that especially interested the neurologist and which were dependent on the teeth, because in doing so he would accomplish a work that no other man had done up to the present time as elaborately as it should be done. It was true there were books containing chapters with reference to dental diseases, but unfortunately the men who had written those books had not had the opportunity of acquiring a thorough knowledge of dental diseases as they should have. The field of pathology was so broad that it was not possible for any one man to become a master of it, and hence specialists.

The second case Dr. Farmer had described, the formation of an abscess on the palate, due probably to the formation of a dental alveolar abscess at the apex of the left central incisor tooth was not so rare. In his own work many of his friends sent him their patients and therefore he had a larger number of cases probably than most other men. The condition described by Dr. Farmer might have occurred without any serious concern on the part of the patient since the pus would readily discharge. Often in such cases the complaint was simply of a little catarrh or of a dropping at the back of the palate and the condition could be tolerated. In the case Dr. Farmer had described the pus failed to pass into the nasal cavity, and lodged in the substance of the palate between the periosteum and the bone. He differed from Dr. Northcroft in regard to a fluid of any character being capable of producing an extensive absorption of bone. He had seen the alveolar process so changed that the teeth instead of occluding had had the roots turned out so as to almost destroy the occlusion. He had seen the external plate of bone as a result of empyema standing out an inch and a half beyond its proper contour, caused by the pressure of an enormous tumor, and that of course was pressure of fluid. The fluid first destroyed the good portion of the osseous substance and then the external plate of bone was moved out under pressure. Therefore fluid would move solid substances in that way. The treatment employed by Dr. Farmer was correct. Dr. Farmer said the cementum was blackened throughout the length of the root; if he had said only the end of the root was blackened and the cementum was about two-thirds covered with the pericementum he would join issue with him on what he did, but since he did not say that it was scarcely fair to refer further to the matter. He was satisfied that sometimes operators would remove teeth for cases where the cementum was nourished through the medium of the pericementum, to a distance of two-thirds the length of the tooth root, with a view of accomplishing a cure. In such cases it was not necessary because an incision could be made to the ends of the roots and all diseased tiisue removed and the tooth preserved. Dr. Farmer had mentioned that the bicuspid teeth were loose and were removed, but before doing anything he himself would attempt to support those teeth in such a way that they would be likely to become firm again. If they were out of position it might not be so desirable to do that, but if they were not, or only slightly, he would take an impression of the teeth and swage a thin platinum plate so as to cover all the upper teeth. The object in covering them all was not to change the occlusion. If only the side affected had the splints all the pressure would be received in the lower jaw and as that was not desired a splint should go all the way round, giving almost the normal occlusion of the teeth. If the teeth were downward a little too far the splint could be constructed with lugs to open the mouth slightly until he had a chance to accomplish something in bringing about a better condition. If the teeth were far out of place some bands might be applied so constructed that they could be put on and cemented. The bands had little eyes in them, through which a piece of wire was put after the manner employed in correcting fractures of the jaw. Or the teeth might be ligatured in Dr. Younger's manner. If anyone present had not witnessed the application of ligatures to teeth by Dr. Younger it would be well worth while to learn exactly how he did it, as he had never seen anyone who could ligate teeth with fine silk ligatures so well. When the teeth were ligatured and so fixed that they were not likely to move then he would proceed with the operation of curetting out the tissues. He would curette out any carious bone or abnormal tissue and then keep the cavity clean and plugged to prevent the orifice closing. Failures were often due to permitting a wound to heal. The orifice should be kept wide open in order to keep the parts clean, and for that purpose he had been in the habit of using a plug of gutta percha such as was used for the making of base plates. He first put it round some cotton and then with the gutta percha warm molded it into the cavity and then took it out and pared away the surplus, leaving a little flange like the stopper of a bottle, and then put it back in its place. Plugging with gauze was essential for about ten days. The gauze absorbed moisture and might be come infectious and rather retard the process of repair. In his own clinic he had little lights about the size of a pencil by which he could illuminate the cavities and see how they were getting on. In the treatment of empyema of the antrum he always used the light to see what was necessary to be done. He had made use of argyrol, which was valuable because it was not an irritant and might be used as a solution of 20 per cent in the eye with immunity. It was black, but it did not particularly stain and did not cause any pain. In the case mentioned, however, it did not seem necessary to use anything of such a character because when the disease was removed the parts promptly healed.

Dr. Northcroft

Was afraid Dr. Brophy had misunderstood him. He knew that the bony walls of the cyst would bulge, but he understood that in the case under discussion there was absorption of the bone of the palate and that it was possible to feel the bare roots of the teeth. Therefore the bone was absorbed away, not pressed away.

Dr. Farmer,

In reply, said the reason that he brought the cases up was because they were debatable. Dr. Northcroft had alluded to the root of the tooth not being bone but cementum, and he quite agreed that only a microscopical examination could settle the point. But provided that it was true dental tissue and it formed part of the dental sac attached to the root, why did not the tooth erupt? He had had patients brought to him complaining of very severe pain in a tooth, where the pain had been very severe on the superior corner of the hyoid bone. After a great deal of experience he found that in 75 per cent of the cases where there was pain in the lower bicuspid it was due to the superior corner of the hyoid bone. He had taken out what was apparently a sound bicuspid after satisfying himself in every way he knew that the tooth was the cause of the trouble, and a microscopic examination had shown absorption going on in the lower part of the root, and immediately following in the wake of the osteoblast there was an inrush of osteoblasts laying down true bone. He did not see, therefore, why it was at all impossible that the lower part of the root of the tooth exhibited was in such a condition when the blood supply was cut off and he still thought it would be found that the lower part was an osteoblastic form and not cementoblastic. With regard to the pushing out of the bicuspids he thought the pus had caused the displacement. He knew perfectly well that it was generally more due to a cyst than the presence of pus. The mucoperiosteum was simply stripped by the pus and when the patient came to him the cuspid was pushed up three quarters of the extent of the bicuspid. He thought the primary cause was the abscess and not due so much directly to the pus.

Dr. Northcroft

Said that was exactly what he thought himself.

THE MINNESOTA STATE DENTAL ASSOCIATION, JUNE, 1906.

DISCUSSION OF THE PAPER OF DR. CLAYTON H. STEARNS, OWATONNA, ON "THE CLINIC."

Dr. Thos. B. Hartzell:

Dr. Stearn's paper is a very valuable contribution to our meeting today, and I was much pleased to be asked to say something in regard to it. I heartily agree with the doctor that a man must have ideas in order to be able to impart them. I find it difficult to impart ideas that I do not possess, and I am thoroughly in accord with that phase of his paper. I feel that, in demonstrations, as they are made, in throwing them out altogether we would be going a step too far, because some of the most valuable points I have gathered have been by some elbow demonstration from some dentist who has had a better way of doing things than I had, and in one or two minutes' work of so-called table clinics I have been able to acquire some valuable hints that have gone through life with me. Now, of course, it is to be regretted that anyone would come to a meeting for the purpose indicated in the latter part of that paper, and I am not inclined to believe that in our state and city meetings, that we more frequently attend than we do the national meetings, that such is the case; in fact, we really do not have any press notices. I do not know that there has been a reporter in the meeting since it began. I think we can safely say that we are not open to that charge in this association, and I feel that the men who have attended this meeting and presented clinics have done it with an unselfish purpose. I do not believe there is a single man who has presented a thought in this meeting or any other in the state of Minnesota because he wished to see his name in the press. I think, however, the doctor points out some new lines of effort that seem very valuable. This work of the clinician could be made much more effective than it is. I think Dr. Owre at one of the Chicago meetings first adopted the plan that appealed to me very much by having his clinic thoroughly illustrated by drawings and perhaps some text. Now if every clinician that comes before his association could do that same thing, have drawings that portray the ideas that he wishes to convey to his auditors and associates beside the table, and with some text explanatory of those drawings, then if the fellow who comes from Missouri "wants to be shown" he has the material at his fingers' ends, and it would wonderfully expedite matters. That would be a valuable addition. Another point I want to bring out is this: We can have comparatively few papers. Some of us want a little help in porcelain work, some of us wish help in pathology and others wish help along different lines, and it is utterly impossible to present a large number of papers, while we can have many clinics. A man wants special help along the line of anesthetics. I gave a clinic along that line and fifteen or twenty were interested in it. It would be impossible to give instruction to the whole group on all of these subjects, and the clinic furnishes special help for individual needs. I would stand for making the clinic better, improving the method, and if occasionally some man from another portion of the country or state comes up here and does anything good enough to merit getting into the press, give him all the credit that is due him.

Dr. J. O. Wells:

I feel very much like Dr. Hartzell does and I do not think I can add anything valuable to the discussion. I can voice my sentiment, however. I think both branches of the association, the literary work and the clinical work, are at least of equal importance, and if there is any difference I am rather inclined to think the clinic is more important than the other. The dental profession is largely composed of men from Missouri, who like to be "shown," and frequently we find men who do not seem to catch a point after they are shown. (Laughter.) Now, according to my way of thinking, the less there is in the paper, especially of the style quoted yesterday morning, the better. There can be no question in the mind of any fair-minded thinker that the clinic is of vital importance, and it would be a very serious mistake to throw it out simply because it is named wrong. Perhaps the gentleman can suggest a better name that we can adopt, but I certainly would not be in favor of throwing it out because it happens to be slightly misnamed. I do not know what has been the experience of the essayist, but I am able to get a better idea if I see a man perform an operation than I can by listening to a description of it in a paper. A man can tell you how to do a thing, but one cannot catch the idea so easily as when one actually sees the operation.

Dr. Alfred Owre:

If I understood Dr. Stearn's paper correctly, he was not advocating doing away with the clinic altogether, but rather criticized the method of conducting it. If a clinic is correctly arranged one can get a great deal of good out of it, and I think the Doctor is trying to call attention to that fact.

I have been trying to think out a scheme for handling a clinic properly, but there is a good deal of difficulty in getting it into working order. It would take six men to manage the clinic properly, besides a good text to bring out the various features. These advantages I had in one of my clinics, and they worked very nicely. I was enabled to show an operation to twenty-seven hundred people at one time, but it took all the energy I had for the next four months to manage it, and I think I had used up another month's energy in preparation.

The whole thing is a question of education, and, as a matter of fact, we must proceed from the simple to the complex, and from the concrete to the abstract. At present conditions are somewhat elementary, but such stages exist in the history of all education.

I think the Doctor's paper is very timely. I always like to listen to his papers; they are not long, yet they have a lot of juice in them. He hit the nail right on the head when he spoke of the management of the clinic. I have to take issue with him, however, on one or two things. He said when he worked out a case in practice he would have no difficulty in explaining it. We have had good illustrations in the past. There was Dr. Webb. He could do a beautiful piece of work, but I have read his book, and I must confess it took a great deal of hard thinking to make out just what he was driving at. On the other hand, when you read the text of Dr. Black you have the two combined. He has worked out some grand ideas, and he knows how to express them. We must not only be able to work out an idea in the laboratory, but we must be able to express it in language. It sometimes takes me six months to write one sentence satisfactorily, and then I frequently have to get up in the middle of the night to write it down lest I forget it. (Laughter.)

Dr. Thos. E. Weeks:

I think there is no question but that Dr. Stearns is at one with every other interested member of the state association. The purpose of his paper, which has been so kindly received and so justly complimented, was that the work in our society should be improved. Now there is no one, and I think I voice the sentiment of every gentleman who has ever attempted to give a clinic, that has ever attempted to give a clinic in our society, that was entirely satisfied with the opportunity he had to present his ideas. Either he was unable to reach as many people as he wished, or there was some feature to criticize. I think Dr. Stearns has some unexpressed ideas behind what he has said of the means and methods of improving the clinic as it exists today. I have in mind several clinics that stand out prominently among all those that I have seen. I think possibly on some former occasion I quoted the clinic given by Dr. W. V. B. Ames and Dr. Gilmer in the early days of the gold inlay at a meeting of the Illinois state association at Springfield. Dr. C. H. Robinson was with me and he will bear me out in the statement that that was probably the best clinic he every saw. It was the best because it was so presented that every man who was interested in the work had an opportunity to see every detail of the operation from start to finish. Now there are two ways in which a clinic may be improved. The first is for every man who purposes coming before an association as a clinician to do what Dr. Owre did, spend the necessary time to prepare himself and to prepare his illustrations. That was the plan followed in the clinic given by Dr. Ames and Dr. Gilmer. The two men working together was quite an advantage because they supplemented each other, and I know the gentlemen who saw the operation understood it perfectly. They did not perform the operation in toto at the chair, but had every step illustrated on models, and all the operation at the chair was to cement the inlay in place. This was a beautifully presented clinic and every one had an opportunity to see it. This is the first way in which a clinic may be improved; the other is for the committee in charge to afford the man who gives the clinic every opportunity and facility to present his ideas. The committee and the clinician must co-operate. I think there is no one who will question the benefit of the clinic, but the ladies and gentlemen who attend our meetings must be fed, and we must provide food according to their needs, consequently we must not abolish the clinic, but we must strive together to improve it, and I agree with Dr. Owre that the suggestions and criticisms are timely, and I am sure we shall profit by the paper and the discussion we have had.

Dr. C. H. Stearns (Essayist):

I feel very much gratified at the reception given my paper. I am sorry that I have given out the impression that I wish to abolish the clinic; this is far from my idea, but what I do mean is to so arrange matters that we may receive benefit and make the clinic valuable. The clinic has an individual field, especially in the dental profession which is advancing so rapidly. Although the clinic is an elementary method of instruction, yet we must employ elementary methods in following any line of work, but what I do deprecate, as stated in my paper, is the simple demonstration of ability to do certain work. This society is not concerned in the least whether we are able to put in a gold filling or not, and it is of no value to simply demonstrate a piece of work that does not carry a new idea with it; that is valueless to the society. But if a demonstration conveys new ideas it is of immense value, and what I do mean to say is to have the clinic so arranged that if the clinician has ideas to present he may have an opportunity to present them in the proper manner and so the entire society may obtain benefit thereby.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States and its possessions, Cuba, Canada and Mexico. All other countries $1.75 a year.

EDITORIAL.

TRIALS OF CONTRIBUTORS.

Those who write for publication, whether it be dental literature or other literature, have trials of which the average reader knows little. Cold type is proverbially cruel, and mistakes creep into the printed page despite the best effort to eliminate them. When once before the world there is no getting them back—they stare the public in the face for all time. The mysteries of the printing office are a sealed book to most contributors, and it has been deemed desirable to say something of the modern methods of setting type for the benefit of those who contribute to journals.

Most matter is set up today by the linotype, which means that each line is cast in a solid piece, instead of set up in separate letters. It will thus be seen that to correct one letter in the proof or even to insert a comma the entire line must be set over. Not only this, but to make any change, such as adding two or three words or cutting them out, involves resetting the entire paragraph. Formerly when the type was set by hand, each letter being separate from the others, changes in the proof were not so serious a matter; but with the linotype it is possible with only a few apparently trivial changes to render necessary the entire resetting of an article. And in doing this it is frequently the case that other mistakes creep in which were not included in the first setting. All this is very annoying, not only to the contributor but to the printer and editor, and the lesson to be gained from it is to have the manuscript as nearly perfect as possible before it is sent in for publication, so that few changes are necessary in the proof.

One thing connected with the publication of papers read before dental societies should be carefully noted by the authors of those papers. The moment a paper is presented before a society it becomes the property of that society, and should be turned over at once to the secretary. The society arranges with some journal for the publication of its proceedings, and the journal selected is thus the official organ of the society. The author of the paper has no more right to offer his paper for publication elsewhere than he would to dispose of a piece of property that he had previously disposed of. If he wishes his paper to appear in more than one journal he should wait till it first appears in the official organ, and then if printed elsewhere due credit should be given the journal of first publication.

When papers are turned over to the secretary they are supposed to be prepared for publication and not to need revising; but as a matter of courtesy the proof is usually sent to the author to be O. K.'d before publication. It is imperative that the author shall read the proof promptly and return, otherwise the journal's proofreader must send it back to the printer without change except to correct grammar and spelling. Printers can not wait indefinitely for the return of proof when an article is in type.

It was not the intention to discuss the business side of dental journalism at this time, but there is a certain phase of it which might be mentioned with profit and which never seems to occur to the average reader. The subscription price of our journals is now so low that it falls far short of paying for the cost of publication. The bigger the subscription list of a journal the worse off is the publisher financially,. unless the advertising patronage is correspondingly increased, because it is only by the advertising that sufficient revenue is obtained to conduct the journal. This being true, it is important that advertisers are made fully aware of the value of advertising in journals, and the only way in which this may be done is for readers when they order any product they see advertised in a journal to mention the name of the journal to the advertiser. This is a very simple courtesy to perform, and yet if it were invariably done it would add greatly to the strength of this feature of the journal, and make it possible to get out a better magazine through the added revenue. Reciprocity of interest between the readers and publishers of any periodical is the normal attitude to assume, and one which works the greatest good to the largest number.

THE EDITOR'S DESK.

MY CREED.

I believe in allowing others to believe as they wish, provided their belief works no injustice to their fellow man or fellow beast. I believe in patience, in consideration, in kindness—above all, I believe in kindness. I believe the world owes every man a living—when he earns it, but not otherwise. I believe in goodness, but not the goody good. I believe in the rugged kind which digs down into the heavy hearts of people and drags out the misery and sorrow and discouragement, and plants the flowers of hope and happiness, and then says nothing about it. I believe in one good act more than in a million sermons. I believe in doing more than in saying.

I believe in correcting a wrong, but not in harboring revenge. I believe in charity, but not in alms. I believe in helping others to help themselves, but I do not believe in creating paupers by a false philanthropy. I believe in strength of character and simplicity of taste. I believe in morals, but not in moralizing; in practice, but not in preaching; in culture, but not in cults. I believe in humility, but not the humility which makes a man look down instead of up. I believe in hope, but not the hope which takes everything for granted and trusts to luck. I do not believe in going out to look for trouble, but I believe in meeting an issue face to face instead of hiding your head in the sand.

I do not believe in worry, but I do believe in taking thought of the morrow, for I have never yet seen a morrow which wholly took care of itself. I do not believe in letting the other fellow do all the worrying, because to do that is to acknowledge yourself something less than a cog in the wheel.

I believe in the good old times—which are now, and will be a thousand years after you and I are dead. I respect the past, but I believe the world is becoming better. I believe in idolatry, but not of graven images. I believe in the worship of men, women and little children; of truth, justice and loving kindness.

I do not believe in killing people, either in passion or by sanction of the law; either in the war of nations or the war of trade. I believe in giving every man a chance to live and make good. I believe in the gospel of work, but not in the greed of gain; in the sanctity of labor, but not in the degradation of drudgery.

I believe in wealth, the wealth of ideas, of knowledge—the priceless heritage left us by the intellect of all the ages. I believe in the fundamentals of civilization, but not in the frills of society. I believe in sunshine, pure air and cheerfulness. I believe in the glorious out-of-doors, and in the sacredness of the soil. I believe in the hallowed portals of the home, and the communion of the family fireside.

I believe in the blessed Trinity of Love, Laughter and Liberty, for where these three dwell there is happiness. I believe in living each day with all my heart, with all my soul, with all the powers that in me lie so that the world may be better for my living. And this then is my creed, to have no creed save that of doing good and being kind—of doing good all the time and being kind all the time, now, henceforth and forever.

"So many sects, so many creeds,
So many paths that wind and wind,
When just the art of being kind
Is all this sad world needs."

BOOK REVIEWS.

A MANUAL OF NORMAL HISTOLOGY AND ORGANOGRAPHY.

By Charles Hill, Ph. D., M. D., Assistant Professor of Histology and Embryology, Northwestern University Medical School, Chicago. 12mo volume of 463 pages, with 312 illustrations. Philadelphia and London: W. B. Saunders Company, 1906. Flexible leather, $2.00 net.

A MANUAL OF PATHOLOGY.

By Guthrie McConnell, M. D., Pathologist to the St. Louis Skin and Cancer Hospital and to St. Luke's Hospital, St. Louis, Mo. 12mo of 523 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1906. Flexible leather, $2.50 net.

These manuals of the Saunders Company are worthy of the house which sends them out. They are, of course, only elementary in character, dealing with the salient features of the subjects, and of necessity not going much into detail. But they fill the purpose for which they were intended most admirably and are well worthy of consideration in this regard. The illustrations are good and the mechanical make-up of the volumes excellent.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

The January meeting of the Odontological Society was a rousing good one. Dr. Wm. Taggart, of Chicago, whom we Eastern men admire very highly, was the essayist presenting a new method of making a pure gold inlay, which was a novel as well as accurate method beyond a shadow of doubt. The large auditorium of the Academy of Medicine was filled to overflowing and the utmost attention given the paper and the demonstration.

Doctor Taggart uses a wax specially refined and makes really a wax inlay, keeping the wax chilled—carving and touching it—getting perfect occlusion, etc. This is then invested in some fine investment material in what might be called the lower portion of a flask for vulcanizing—(on a small scale), when this has hardened—a ring is set over it and filled with investment material so the two parts can be separated. A small piece of brass wire, called a "sprue former," having been attached to the wax, extends through the material in this second ring. When dried this little flask is heated and the wax melted into the investment. Thus he has a complete matrix without the use of gold or platinum to form on. When the small brass wire is removed, a fine opening remains leading to the matrix and in the top of the second ring a cup-shaped depression has been formed to this wire, which depression may be called a crucible. In this crucible pure gold is placed. The flame of an oxy-hydrogen blow pipe heats the investment and melts this gold almost like water boiling, when a handle is pushed which does three things in less than a second—turns the blow pipe one side; covers the flask with an asbestos cover and brings compressed air pressure against the molten gold, forcing it into the cast or inlay matrix of plaster. This drives the gold into every interstice of the mold under pressure.

It seemed to be simply marvellous, and many comments were made on all sides. The method is adapted to small gold plates with clasps all cast in one piece of clasp gold material. This appealed to many.

Doctor Taggart claims that in one-half hour he can teach any one how to use this new system of his and how to make an inlay of gold of such perfection as they never dreamed of by the old method.

In opening the discussion on Doctor Taggart's paper, Doctor Goslee, of Chicago, said that the essayist's principle marks the dawn of a new era in dentistry.

The system reduces the making of inlays or any other method for casting metal to which it is applied, to a scientific mechanical certainty of accuracy.

Doctor Perry went in ecstacies over the exposition. He, with others, who were to take part in the discussion had witnessed a practical demonstration of the principle at a private clinic during the afternoon. He eulogized Doctor Taggart to the skies and his system, calling it by many names, saying, too, that he had reached the point where he was ready to divorce the laboratory from his office, but tonight we are brought together to witness the exhibition of the most startling and most perfect thing he has ever seen in his life.

Doctor Littig said that Doctor Taggart has given us something wonderful. Heretofore we have tried to cast gold, but it would never fit anything. We have tried to deposit it, but that was a failure. Doctor Taggart has solved the mystery. In a faltering voice he concluded by saying: The clinic today has paid me for remaining with you so long.

Doctor Hart thinks that it is going to be possible for the man of mediocre ability to do operations equal to those of Varney or Webb. Think of the strain removed from the patient as well as the operator. Doctor Taggart has elevated our profession today.

Doctor Ottolengui said that his remark to Doctor Taggart when he saw for the first time what he had accomplished, was: You have done something for humanity which has not been equalled in fifty years. You have given us a perfect gold filling and painless dentistry. He asked of the audience: Haven't you said, It looks as though it had been melted into the cavity? Well, here it is.

Dr. Wm. Tracy declared that Doctor Taggart was making things move. Its been his energy, his American courage which has done it. I feel humiliated in standing before his genius.

Doctor Van Woert took the opportunity to say: I told you what this man was. His method of making porcelain inlays has a commercial and a scientific value not to be estimated. He has turned the wheel of dental science completely around.

Doctor Jarvie remarked that he seemed to feel that he had retired from dentistry too soon. It is a process that requires much exactness, but the results are beautiful.

Doctor Ashe likened Doctor Taggart to a prestidigitator.

Doctor Gillett and others contributed to the discussion before Doctor Taggart was called upon to close the discussion, which he did by saying that he had received an unusual demonstration. He was more than pleased that he had been able to present to the Odontological Society, first, the results of his efforts. "I know I have given you a good thing, but am afraid if I say much about my reception and your praise, it may overcome me."

Doctor Taggart with his exhibition really did surprise us, astound us, glorify us and himself and excite us. He is not yet ready to place the apparatus on the market. The price may be somewhat prohibitive, but let us sincerely hope he can find enough demand to make the financial venture a success to him which he will rightly deserve.

The January meeting of the Central Dental Association, which was the annual election, reports of officers, etc., was held at the Cafê de Jianne, 17 Central avenue, Newark, N. J., on the 21st inst., with President Joseph S. Vinson in the chair. Dr. A. W. Harlan, of New York City, was the essayist of the evening, his subject being:

"The Retention of Teeth in the Mouth," which might be considered another method of describing pyorrhea alveolaris. Doctor Harlan presented a very scientific paper, dealing largely with one's mode of living—regularity in everything—care especially in regard to diet, claiming that rigid care in this direction would produce marvelous results.

After a discussion by Dr. B. F. Luckey, of Paterson, Dr. Chas. A. Meeker, of Newark, and one or two others, the society proceeded to its annual election. The reports of the various officers showed the society to be in a flourishing condition, especially regarding number of members, and balance in treasury. The principal officers elected were as follows:

President—H. P. Marshall, D. D. S., Newark, N. J.
Vice-President—C. F. A. Hahne, D. D. S., Jersey City, N. J.
Secretary—E. W. Harlan, D. D. S., Jersey City, N. J.
Treasurer—Chas. A. Meeker, D. D. S., Newark, N. J.

On the 18th of February, which is the twenty-seventh anniversary of the C. D. A., it will hold its annual banquet, at the New York Athletic Club, Fifty-ninth street and Sixth avenue, at which time it is expected there will be "something doing."

There is always a good time when this society has a banquet. We notice among the speakers on the list a member of Congress from New Jersey, the Hon. R. Wayne Parker; Prof. John I. Hart, of New York; "our own and only" William Wallace Walker; your former compatriot, A. W. Harlan, and the retiring president of the C. D. A., Dr. J. S. Vinson, with last—but by no means least—the president of the New Jersey State Dental Society, Dr. W. R. Brinkman.

The New York Institute of Stomatology changed its place of meeting for February with the hope that more room and better ventilation might be obtained. It was a good move, for the accommodations are more ample, the lighting excellent, and ventilation very much better than former place, while the dinner—the regular dinner of the hotel, which this society always enjoys previous to the hour of meeting, was voted an improvement. Thus the meeting occurred at the St. Margaret's hotel, 129 West Forty-seventh street, with President S. E. Davenport in the chair.

The subject of the evening was "Local Anethesia," which was opened by R. H. W. Dawbarn, M. D., of New York. He described at much length various methods of using cocaine, eucaine, etc., to produce local anesthesia, but in the main his remarks applied to minor surgical operations and were of but little value to the dental practitioner. He spoke specially of placing a quantity of cocain within the nostrils just over the apices of the incisors and thereby obtaining quite satisfactory anethesia of the upper six front teeth. Also of so injecting cocaine as to reach the inferior dental nerve just before it enters the bone, thereby rendering all the lower teeth free from pain. But this injection must be through the cheek.

Professor Dawbarn was followed by Dr. Henry W. Gillett, of New York, who spoke to some length and of such generalities that all are quite familiar with.

Doctor Vaughan, who read a paper before the C. D. A. early this winter, treating of the "blocking out" principle which was reported, spoke also, and in the same general way.

On the evening of January 25th the three dental societies allied with the "Institute" in the publication of the "Journal" held a joint meeting in Boston, at which meeting the "Institute members" were invited guests. Some fifteen or twenty from in and around New York City were able to go, and were handsomely entertained at dinner at Young's hotel, prior to the meeting. Then on Saturday they were taken in hand by some of their Boston confreres and shown through several buildings, etc., connected with dental education at the "Hub."

The First District Dental Society held its usual meeting for February at the Academy of Medicine, with President A. L. Swift in the chair. The preliminary business of the evening consisted in the election of a large number to membership. At almost every meeting of this society for some time past there have been large additions and it is certainly in a flourishing condition.

Dr. Joseph Head, of Philadelphia, presented a paper on "Electrolysis as an Agent for Reducing Infectious Inflammation."

In a brief but forceful paper he presented the results of some work he has been doing with the electric current in correcting inflammatory conditions in the mouth, obtaining good results in the treatment of pyorrhea, and aborting and curing abscesses. He found that from an inflamed surface he was able to extract a quantity of frothy serum, giving patient immediate relief and beginning the process of repair at once.

With some detail he gave the results of his deductions, and his belief that the result of electrolysis under such circumstances was to produce nascent oxygen, which he thought was the powerful agent, effecting the cure. Dr. Henry W. Gillett opened the discussion, claiming that there was so much in the paper of value, and new to him in certain directions, that he did not feel able to discuss it properly. He said he was glad he had kept his cataphoritic apparatus in order, for he should get it out on the morrow, and take up this idea of Doctor Head's believing it to be well worth while.

Dr. Sinclair Tousey, a specialist in electro-therapy, followed, differing somewhat from Doctor Head in conclusions, yet really amounting to the same as far as result at least was concerned. Doctor

Head asked Doctor Tousey many questions and we were quite entertained and instructed by what might be called the cross-examination. The result tended to emphasize the value of Doctor Head's investigations. Dr. John Q. Byram, of Indianapolis, Ind., being called on, demurred on the ground that he knew nothing of the subject. But he wanted to congratulate Doctor Head on what he had accomplished, saying that it was a good thing to find "one of us porcelain cranks" (to use his own words) who knows something more than porcelain. Dr. W. W. Walker spoke eulogistic of Doctor Head and his work.

One of the gentlemen present offered himself during the meeting as a "victim" and Doctor Head demonstrated his idea, nearly every one present seeing the result.

There is "another Richmond in the field." Invitations have been received from the "Odontotechnique Society, of New Jersey," which society is new to us, though the invitation says, "incorporated in 1905." They propose holding an afternoon clinic April 3, with a banquet in the evening, to be followed by a paper by Dr. Ellison Hillyer, of New York, entitled, "The Progress, Past and Present, of Prosthetic Dentistry." With two months advance preliminary notice there should be a good attendance at this new New Jersey society.

At a meeting of the Second District Society held on February 11, Dr. John Q. Byram, of Indianapolis, Ind., read a paper on "The Formation of Matrices for Porcelain Inlays," which for descriptive technique was as complete a paper as has been presented to any of our societies for many a day.

Like all good things that come out of the West, both the essayist and his paper was well received.

Doctor Byram's deductions were, that heretofore we have been dealing with abridged forms of cavity preparations and the making of matrices. After summarizing the various characters of matrix metal, such as gold, platinum and platinized gold, classifying them as to their respective merits for the purpose he assured us that the best general results would be gotten from the use of platinum 1-1000. He does not invest his matrices in the making of porcelain restorations, believing it to be unnecessary and a loss of time.

In describing the methods of annealing the several materials he cautioned against preparing platinum for use by heating over a gas flame, because it had the property of hardening or at least of not becoming thoroughly pliable under that treatment. Platinum should be annealed in the furnace at a very high heat and for a length of time, fifteen minutes to half an hour.

He described three methods of making matrices. Burnishing to cavity, swaging to cavity and swaging to model. Combination of the first two he believes to be best, using a piece of silk gauze or goldbeater's skin between tooth and metal. When the base of the cavity has been fitted, he uses a piece of rubber dam to compress the platinum to the edges of cavity. This prevents wrinkling of the metal. He then burnishes the edges. The next procedure is to place either camphor of what is known as hard wax, made pliable in the cavity in surplus, then swaging the matrix to place by exerting pressure on same with tape. The wax is removed from matrix by heating and absorbing with cotton.

Doctor Byram does not believe it possible to procure an absolutely accurate matrix by burnishing it to a model.

Dr. T. E. Weeks, heretofore of Minneapolis, expressed his pleasure and pride at having "Son John" as he called him, here and at the opportunity to open the discussion of a paper of such merit. It describes minutely every known form of matrix. His directions for annealing he thought an excellent point. Men *do* use both burnishing and swaging in making matrices, although they say they burnish only. Doctor Weeks thought sharp models could be gotten from sharp impressions. The trouble has often been that cements designed for the purpose should be used. They can not well be used for any other purpose. Cements for impression taking are made non-sticky and quick setting, while those for filling purposes should and do possess other qualities which make them lasting as filling materials.

Doctor Dills, of Brooklyn, says he uses the Taggart method of making amalgam models and thinks it expeditious and an improvement over all others. Doctor Van Woert said the same thing with emphasis and that it—amalgam—makes as good a model as can be produced. When operations fail, it is the man who is wrong and not the principle.

Doctor Refsum said that he has been using Doctor Byram's method for several years, since that gentleman had taught him the technique and had placed a number of fillings of porcelain in his incisor teeth which he invited all to examine. It must be said that for color and adaptability they were excellent.

Doctor Ferris, of Brooklyn, told of the use of Ames' technique cement, which he is more than pleased with.

Doctor Ottolengui swages matrices in proximal cavities by wedging *wet* cotton until the cavity is filled. For shaping the edges he believes the fingers will conform the matrix better than anything else that can be used.

As to the theory that swaging matrices to the impression leaves no room for cement bulk, he believes to be a fallacy. There is enough shrinkage to the material—porcelain—to leave room for the cement.

Doctor Byram, in closing, sustained his contentions very well. Throughout his paper and closing remarks he preserved the quality of lucidness, which some others fail to reach.

Two points were not brought out during the evening. One was the taking of impressions under pressure to insure sharpness. This must be done intelligently and carefully so as to prevent distortion. The other point was the first fusing of porcelain, the return of matrix to cavity fo reburnishing. It has been my experience that platinum 1-2000 or less should always be treated to reburnishing.

Sincerely, "THE BOROUGHS."

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

The Guarantee Man:—This kind of non-professionalism will be stopped when ethical dentists work in harmony and inform their patients that the dentist who guarantees an operation is either ignorant or he is a quack.—*Thomas J. Suggs, Aurora, Mo.*

Root Dryer:—Upon the appearance of the Evans Root Dryer it commended itself to me and I began its use. Coincident with its adoption my proportion of roots which developed trouble increased. The moment this was realized I discontinued its use and the ratio dropped again to normal.—*C. Edmund Kells, Jr., New Orleans, La.*

Correcting Occlusion After Making Contact Points:—Correcting the occlusion or adapting the occlusion to the changed conditions brought about by the wedging of the teeth prior to filling is as necessary as making the contact point. Half the question, it seems to me, is the proper grinding of the cusps to prevent the tendency to create a space partly as bad as previously existed.—*W. V.-B. Ames, Chicago.*

Seal All Dressings in Teeth with Cement:—Apply dressing in cavity, cover with ordinary card disc to prevent any pressure by cement coming in contact with dressing. Mix cement rather thin, so it will drop from spatula and adjust itself in cavity. This gives the patient an opportunity to use the tooth while under treatment, prevents their tasting medicine, and, lastly, you get the full benefit of the dressing without it becoming contaminated with the fluids of the mouth.—*LeGrand M. Cox, St. Louis, Mo.*

Irregularities in the Deciduous Teeth:—During four or five years I have advanced the opinion that the position of the deciduous teeth affects the permanent teeth, and that therefore any irregularities in the deciduous teeth should be corrected in order to prepare the way for the permanent teeth. If the deciduous teeth are brought to occupy a normal position, the crowns of the underlying permanent teeth will naturally take a correct position and their roots will be formed in harmony.—*E. A. Bogue, New York, N. Y.*

To Remove Cotton Wound Around a Broach:—Scrape bright the side of the shank corresponding to the smooth side of the broach. This will serve as an indicator when the broach is wound. Lay the broach, barb side down, flat upon a glass slab or other smooth surface. With a knife cut the cotton clear of the broach throughout its entire length. Turn the broach over and draw the knife blade lightly backwards over the part covered with cotton. This will disengage the cotton from the barbs.—*R. E. Sparks, Kingston, Canada.*

Cleansing Root Canals:—There is no broach made smooth enough, or probe that is small enough, to get into small root canals that the use of sulphuric acid is not needed to enlarge. The contents of small canals may be such that gases enough will form there in comparison to the space they have to expand in to cause just as much trouble as if there were ten times as much, because the pressure and irritation are there. The ordinary bristle you buy would enter easily, if at all. But it may meet an obstruction, and by the use of sulphuric acid and patience you can get by this and find the trouble beyond the obstruction.—*W. H. Taggart, Chicago.*

"Soft" and "Hard" Teeth:—It may now be regarded as firmly established that dental caries does not occur because of any faults in the calcification of the teeth further than that pits, grooves and accidental physical imperfections give greater opportunity for the cause of caries to act. Also that there is no such thing as soft teeth and hard teeth in the sense that these phrases have heretofore been used. Neither susceptibility to decay nor immunity from decay are in any wise dependent upon variations in chemical composition of the tissues of the teeth, but must be dependent upon the oral secretions and what they may contain that enables the fermentative process to develop substances that may act upon them, and localize that action.—*G. V. Black, Chicago.*

Desensitizing Dentine:—Very often we are called to excavate cavities where decay has extended over the greater part of the tooth, and its removal is an extremely painful operation. With children this is a very difficult task. I have devised a most successful method, as follows: Before attempting to remove the decay, protect the cheek and tongue with cotton rolls; then, with a silver nitrate point, thoroughly saturate the decay with the nitrate. Dry out the cavity and seal with a thick solution of chloro-percha and cotton, leaving it in the tooth for a few days. When the patient returns you will find the decay very dark, and it can be removed with very little pain. Small carborundum stones instead of burs are a great help in preparing sensitive cavities.—*C. J. Hadley, Chicago.*

Advancement of Dentistry:—Dentistry, in recent years, has improved its appliances and in some measure its methods, but the vaunted general advancement of the profession as a whole is a matter of boasting rather than a reality. Where there has been advancement and improvement in special mechanical processes and methods, it has been a result of study and effort on the part of individual members rather than because of any special upbuilding of the body of the profession, or because of any advance in the methods or substance of teaching in dental colleges, or because of any new and helpful scientific matter running through dental literature. It will be conceded by all, I think, that but few practitioners know the true meaning of the practice of oral prophylaxis, and fewer still have any just conceptions of the benefits flowing from it.—*D. D. Smith, Philadelphia.*

To Break a Chill:—Fatal "typhoid" (?) pneumonia often succeeds a "chill." To arrest the shivering (often taken as ague) is to *preserve* life. Do not waste a minute! Dose No. 1. Twenty drops of chloroform and twenty drops of strong camphor on "domino" or teaspoon of sugar in one-half wine glass of hot water. Hold breath and swallow. Apply hot water bag to feet. Dose No. 2. In ten minutes by the watch fifteen drops of each as at first and "snuff" hard from the bottle or from handkerchief the chloroform and camphor vapor. Dose No. 3. In ten minutes same as No. 2 and inhale. Dose No. 4. In ten minutes, if rigor continues, same as Nos. 2 and 3, and inhalation. I never had to give fourth dose. Call a physician to give hypodermic of strychnia. Winter "chills" are dangerous. If "congestive chill" lasts till blood coagulates in lung, brain or spleen, the patient seldom recovers. The chloroform and camphor mixture should be kept on hand.—*A. C. Hewett, M. D., Chicago.*

Porcelain Furnaces:—Presumably it is because of lack of knowledge of the electric oven by the majority of the profession that the expert furnace men and dealers have evolved the automatic, pyrometer-governed furnace now placed upon the market. With this kind of a furnace the baking takes care of itself, and produces good results even though the person using it may be a tyro in porcelain art. Yet even this furnace does not satisfy the expert, as there is a variation of time in the first baking and the subsequent ones, unless the oven is allowed to cool off between each baking. It is therefore advised to use more than one furnace if you wish to attain perfection. If you have but one, study its little eccentricities, the variations of current, the exact time necessary to get the required heat; test it from time to time as the muffle undergoes change in size and thickness by continued use; in short, master all its changes. In this way you may hope to attain some degree of perfection in porcelain work.—*L. L. Davis, Chicago.*

Ranula—True ranula, or the dilitation of Wharton's duct, is to be observed not only by the elevation of the tongue on the side involved, but the sublingual or submaxillary gland may become dilated to an enormous extent, exhibiting a large swelling beneath the chin or the angle of the jaw. In the patient having ranula the papillæ not infrequently atrophy, and by excluding the saliva from the other ducts than those involved by the ranula the surface of the mucous membrane, along the line from which the saliva formerly made its exit into the mouth, will be found smooth and dry. No orifices can be found. No saliva enters the mouth from the glands whose ducts are closed. It is necessary to employ means by which an opening may surely be made permanent. This I have accomplished by making a small silver tube and perforating it with holes, then bending it so as to form a ring about one -half inch in diameter. This is an open ring, one end of which is carried into the cyst and out through the mucous membrane and telescoped into the other end, thus uniting the ends of the tube and completing the ring. The perforated ring thus introduced will admit the saliva within the cyst and allow it to escape through the tube and into the mouth. The ring must be rotated daily, else the tissues may fill the openings in it, thus defeating the object of its insertion.—*Truman W. Brophy, Chicago.*

MEMORANDA

MONTANA STATE DENTAL SOCIETY.

The annual meeting will be held at Helena, April 12, 13, 1907. It is hoped that a good representation of the profession will be in attendance.

W. E. TRERISE, *Secretary,* Helena.

BANQUET TO DR. HASKELL.

A banquet was given in honor of Dr. Loomis P. Haskell, of Chicago, by the faculty of the State Dental College, Dallas, Texas, Monday evening, January 21, 1907.

KENTUCKY STATE DENTAL ASSOCIATION.

The next annual meeting of the Kentucky State Dental Association will convene at Louisville, Ky., May 20, 21 and 22, 1907. We anticipate a most interesting and profitable meeting. A cordial invitation is extended to the profession.

W. M. RANDALL, *Secretary.*

WEIGH YOUR GOLD.

One of our subscribers suggests that dentists weigh their gold when they buy it. He intimates that some dealers are sending out gold plate and solder short of weight, and that a just discrimination should be made between the honest dealers and the others.

CHICAGO-ODONTOGRAPHIC SOCIETY.

At the annual meeting of the Chicago-Odontographic Society the following officers were elected for the ensuing year:

President, F. E. Roach; vice-president, F. W. Gethro; secretary, F. H. Zinn; treasurer, G. W. Dittmar; librarian, J. H. Woolley; board of directors, H. A. Drake; board of censors, F. B. Noyes, J. E. Hinkins and C. E. Meerhoff.

FRANK H. ZINN, *Secretary.*

100 State street, Chicago.

SOUTH DAKOTA DENTAL SOCIETY.

The 25th annual meeting of the South Dakota Dental Society will be held in Sioux Falls June 5-6-7. A most interesting program has been arranged and we want to see the largest attendance the society has ever had. A large membership is desired, and every dentist in the state, who is eligible, should become a member.

A special invitation is extended to Southeastern Minnesota and Northwestern Iowa dentists to attend.

FERDINAND BROWN, *Secretary,*
Sioux Falls.

LOS ANGELES ASSOCIATION OF DENTAL ALUMNI.

At a recent meeting of the Los Angeles Association of Dental Alumni the following officers were elected: President, William Bebb; vice-president, Genette F. Harbour; secretary, W. W. Homan; treasurer, Charles E. Rice. The following committees were appointed: Program committee, James D. McCoy, J. F. Curran and Horace E. Brown; membership committee, D. S. Gillespie, D. D. Cave and H. Gale Atwater; illegal practitioners' committee, J. F. Cook, Bert Boyd and J. W. Neblett.

W. W. HOMAN, *Secretary.*

MINNESOTA STATE BOARD.

The Minnesota State Board of Dental Examiners will hold its next regular meeting at Minneapolis, in the Medical building of the State University, on April 2, 3 and 4, 1907.

All applications must be in the secretary's hands by 11 o'clock of April 2. Candidates will be furnished all necessary blanks and such other information as is necessary upon application to

GEORGE S. TODD, D. M. D., *Secretary.*

Lake City, Minn.

BOARD OF DENTAL EXAMINERS OF CALIFORNIA.

At the recent meeting of the Board of Dental Examiners of California, held in December, there were forty-seven applicants, of whom twenty-four were successful and were granted licenses. Officers for the ensuing year were elected as follows: President, Garrett Newkirk, M. D., Pasadena; secretary, C. A. Herrick, D. D. S., Jackson, and treasurer, Joseph Loran Pease, D. D. S., Oakland. The next examination will be held in Los Angeles, beginning on the second Monday in June. This will be followed by examination in San Francisco beginning on the third Monday in June.

C. A. HERRICK, *Secretary,*

ALUMNI ASSOCIATION WASHINGTON UNIVERSITY DENTAL DEPARTMENT.

The annual meeting of the Alumni Association of Washington University Dental Department (Missouri Dental College) will be held May 20 and 21, 1907, at the college building, 2645 Locust street, St. Louis, Mo. A number of prominent essayists and clinicians have been secured and an instructive and interesting program will be presented. Adequate space has been secured for the various manufacturers' exhibits. This will be a noteworthy feature of the meeting. All ethical practitioners invited.

DR. A. J. PROSSER, *Chairman.*
DR. F. W. HORSTMANN.
DR. CHARLES HEBERT.
Executive Committee.

RESOLUTIONS ADOPTED BY THE AMERICAN SOCIETY OF ORTHODONTISTS.

New York, December 29, 1907.

Resolved, That in the opinion of the members of the American Society of Orthodontists, the practice of paying a commission, honorarium, or any sort of fee, in consideration for the reference of a patient is both unwarrantable and unprofessional; and be it

Resolved, That the payment of any such commission, honorarium, or fee, by any member of this society, shall be sufficient cause for the expulsion of said member, by vote of the society after conviction; and further be it

Resolved, That in case of co-operation in the care of a patient between a general practitioner and an orthodontist, there shall be no division of fees, but each man shall render a separate bill for his personal services.

FREDERICK S. MCKAY, *Secretary,*

RECENT PATENTS OF INTEREST TO DENTISTS.

839,920. Magnesia-cement composition. William L. Dudley, Nashville, Tenn.

840,348. Specialists' chair. Charles N. Leonard, Indianapolis, Ind.

840,738. Dentifrice. Frank P. Barnard, Worcester, Mass.

840,921. Dental swage. Joseph W. Dickey, St. Louis, Mo.

841,006. Apparatus for the manufacture of reducing amalgam. Herbert P. Ewell, Rochester, Mich.

38,408. Design dental cabinet. Harry C. Gowran, Two Rivers, Wis.

38,409. Design dental cabinet. Harry C. Gowran, Two Rivers, Wis.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

NEW JERSEY STATE DENTAL SOCIETY.

The 37th annual meeting of the New Jersey State Dental Society will be held in the Auditorium at Asbury Park, N. J., commencing 10 a. m., July 17th, and continuing through the 18th and 19th. The headquarters will be at the Hotel Columbia, with the rates of $3.50 and $4 per day, and all reservations must be made before July 1. Prominent dentists have signified their intention of reading papers, and the clinics will all be of a new and novel nature.

Clinic committee is in charge of Charles H. Dilts, D. D. S., of Trenton, N. J. Exhibit committee in charge of Walter Woolsey, D. D. S., Elizabeth, N. J. Programs will be out June 15. Last year over 800 dentists registered in attendance. The Auditorium where the meeting is held is the largest and best adapted building on the Jersey Coast. Cut off the week of July 15 and be with us. CHARLES A. MEEKER, D. D. S., *Secretary*,
29 Fulton street, Newark, N. J.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners will hold their twenty-fifth annual meeting in Minneapolis, Minn., beginning Friday, July 26, and continue through the 27th and 29th. Accommodations have been secured in the leading hotel of Minneapolis, "The West Hotel." Rates as follows: Room without bath, $1 per day for each occupant; room with bath, $2 per day for one person and $1.50 per day for each additional person in room. Hotel on European plan. Any room in the hotel capable of accommodating two people. Telephone in each room. Hot and cold water.

A large attendance of delegates is earnestly requested. Committee on colleges, joint conference committee, tabulation of examining board's reports, the committee for promoting a system of credits and uniformity of examinations will all give exceedingly interesting reports valuable to all the members of the association. Railroad rates will be given at a later date.

For information apply to Charles A. Meeker, D. D. S., secretary and treasurer, 29 Fulton street, Newark, N. J.

THE FIRST FRENCH CONGRESS OF STOMATOLOGY.

The "Société de Stomatologie" wishing to celebrate the 20th year of its foundation, has decided to organize a Congress of Stomatology in Paris which will be held from the 1st to the 5th of August, 1907.

This congress will be the long awaited consecration of those professional ideas and scientific principles which our society has always defended ever since its formation. Its aim will be to clearly demonstrate that stomatology is a branch of medicine—a medical and surgical specialty, just as much as is ophthalmology, laryngology, etc., and requiring from its adepts a complete knowledge of medicine, and including all the scientific studies which in all countries are recognized as essential for the obtention of the title of "M. D."

The diseases of the mouth, teeth, and jaws are closely related to other diseases and with the general pathology of the organism.

A correct knowledge of this relation is necessary for all who practice dental science, or rather stomatology with all that it includes.

Special technical training is most necessary for the perfection of the surgeon and for any other specialist, and is easily acquired by the learned physician, but must be secured by a rational method of instruction.

Stomatology includes all that is known in this specialty, whether technical or scientific, and the Stomatologist applies all to the care of the mouth, teeth and adjacent parts.

The scientific and practical conception of our art, which is so obviously applicable to the public welfare, does not alone apply to the French stomatologists, but equally to a large number of stomatologists of other countries as well, whose works, publications and scientific societies have long since shown us their high medical culture and professional standing.

Our "Premier Congrès de Stomatologie" sincerely hopes to be honored by your presence; for it is only by the united efforts of all our confreres from all other countries that its real value and significance will be established. Your presence will indicate the general character of our aims.

The medical tie unites us all in one common sympathy and brotherhood, which will insure unity and success of our cause, which will be at the same time scientific, moral and social.

Yours very sincerely,

COMMITTEE OF ORGANIZATION.

Honorary president, MM. Galippe and Redier; president, M. Cruet; vice-presidents, MM. Claude Martin and J. Ferrier; general secretary, M. Chompret; secretaries, MM. Béliard and Bozo; treasurer, M. Gires; members, MM. Amoëdo, Bachelier, Bacque, Beal, Beltrami, Besson, Bouvet, Bouyer, Bugnot, Capdepont, Caumartin, Chemin, Courchet, I. Davenport, Dunogier, Faré, Fleury, Frey, Gaillard, Granjon, Hugenschmidt, Mainguy, Marais, Maurel, Montès, Nogué, Nux, Nuyts, Pietkiewicz, Pitsch, Queudot, P. Robin, Rodier, Rosenthal, Siffre, J. Tellier, Thésée, Thomas, Tourtelot.

DR. FRANK C. GILL.

Dr. Frank C. Gill, of Rockford, Ill., died on Thursday, February 7, after a brief illness of pneumonia, aged 71 years.

Dr. Gill began the study of dentistry with a preceptor, Dr. Thomas Palmer, of Fitchburg, Mass., and later practiced a short time in Springfield, Vt. In 1878 he came to Rockford and formed a partnership with his brother, Dr. Henry Gill, under the name of Gill Brothers.

Frank (as he was familiarly called) was a most lovable man, of a kindly, gentle spirit, generous and brave. He made friends easily and never lost one. During the last few years of his life, when health failed, his practice was largely confined to the administration of anesthetics, extracting teeth and prosthetic dentistry, in which he particularly excelled. Dr. Gill was a charter member of the Northern Illinois Dental Society and the Odontological Society of Rockford, and as long as health permitted was an enthusiastic and willing worker. He will be greatly missed by the community in which he lived and by his professional associates, who loved him as a brother.

M. L. HANAFORD.

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, APRIL, 1907. No. 4

STERILIZATION OF WATER AND INSTRUMENTS.

BY DR. HENRY L. BANZHAF, MILWAUKEE, WIS.

In the November issue of THE DENTAL REVIEW Dr. A. W. Harlan, of New York, describes a method of sterilization and disinfection as related to water, instruments and soft tissues, including putrescent pulps. The author gave no bacteriological experimental proofs in support of this theory, yet supposed the instruments to be sterile after they had been treated according to his method. This was determined as follows: An assistant had a wen on the second joint of his left index finger. This and the instrument used in cutting it out were scrubbed in the solution. The wound was dressed with this, lint placed over it and sealed. Healing took place without suppuration. This was apparently accepted as proof of its disinfectant properties. Bacteriologists in general will not accept this proof as conclusive. The results of one experiment or observation hardly warrant so general a conclusion.

The purpose of this paper is to review the work of Dr. Harlan and to add the results of my own experiments prompted by the paper referred to. My conclusions are all based on bacteriological experiments, and they differ materially from the findings of Dr. Harlan. His method of disinfection consists of two parts:

1. The preparation of sterile water. This is described as follows: "If you will take a copper boiler or pot and have the interior thoroughly polished and leave the water standing in contact with this surface for three and one-half hours, the various substances floating and dissolved in the water will be precipitated, in consequence of the solution of a small portion of the polished copper surface. This will not affect the taste, *but the water will be steril-*

ized." He further adds: "When we want to sterilize water quickly, we take a copper coil, place it in a jar or pitcher of water and turn on the electric current and in ten minutes we will have copper sterilized water for use."

According to this the coil arrangement is *not essential* for the copper sterilization of water, as it only shortens the time necessary for sterilization. This coil arrangement, however, makes the process more complicated, since it is not known whether the final sterilization is due to the copper or whether the heat produced by the electric current or the electrolytic dissociation products of the different chemical substances dissolved in water have something to do with the disinfection. These possibilities were suggested in the discussion of the paper by Dr. Hinkins. In order to avoid this complexity I have in my experiments dispensed with the copper coil and only used the polished copper dish.

2. The disinfection of the instruments. Dr. Harlan says: "A pint of copper sterilized water is placed in a glass dish. Add five grains of dried sodium-carbonate (Na2 Co3) and immerse the instruments (which have been scrubbed with a sterilized brush, in sterilized water) for five minutes, and then rinse them with copper sterilized water in a second dish and dry them with cotton cloths that have been heated to 350° F., and place in a covered glass dish, and they are ready for use."

The experiments which I shall describe have the following object:

1. Can water be sterilized by placing it in a polished copper dish for three and one-half hours?

2. Are the instruments sterile after they are subjected to this method?

1. *Is the water sterile?* The water used was Milwaukee city water, obtained from Lake Michigan, as drawn from the faucet of our chemical laboratory. The water was first permitted to run for ten minutes in order to empty the local pipes before sampling, and then poured into a bottle, which had been previously well cleaned and sterilized in a hot air sterilizer, at 180° C. for one hour, and then cooled. From this bottle the water was poured into two dishes of equal size, one of polished copper, the other of porcelain. Both likewise had been previously sterilized by heat. These two dishes

were placed side by side and both covered by a sterilized bell glass in order to keep out the dust. The temperature was that of the laboratory. Every hour one cubic centimeter was taken from each of the two samples of the water by means of a sterilized pipette and transferred to a sterilized petri-dish and mixed with 10cc of sterilized nutrient gelatine. The technic employed was the same as followed by bacteriologists for the bacteriological analysis of water and which is described in any of the text books on water analysis (Mason, Prescott and Whipple). After the gelatine was solidified the petri-dishes were set aside at the laboratory temperature for forty-eight hours and then the number of colonies were counted. A photographic picture of the petri-dish culture was taken (See cut). The result of these investigations were as follows:

NUMBER OF COLONIES.

	Porcelain.	*Copper.*
One hour	Over 1000	398
Two hours	Over 1000	306
Three hours	Over 1000	294
Four hours	Over 1000	287 (very small)
Five hours	Over 1000	200 (very small)
Six hours	Over 1000	200 (very small)
Eighteen hours	Over 1000	5 (very small)
Twenty-four hours	Over 1000	2 (very small)
Forty-eight hours	Over 1000	2 (very small)

We see from this table and from the accompany cuts: (1) That the number of colonies obtained from the water which stood in the copper dish was much smaller than the number of colonies obtained from the water which stood in the porcelain dish for the same length of time. This proves that the action of the copper upon the bacteria in the water is *bactericidal.* This is quite pronounced after the water has stood one hour in the copper dish. (2) In both porcelain and copper the water-bacteria lost a great deal of their vitality after a time. The colonies grown in nutrient gelatine became smaller, indeed so small that a magnifying lens was necessary to count them. This decrease of the vitality of the bacteria is most marked in the copper-water. The size of the colonies found in the water which stood in the porcelain dish was much larger than in the corresponding copper dish. Hence, also in this respect the copper proves to be a poison for the bacteria, restraining their development. While the size of the colonies grown from the water which stood in the copper dish was very much smaller after one hour, the colonies grown from the water which stood in the porcelain dish began to decrease in size only after it had stood there for four hours. Then also a material decrease in the size of the colonies was apparent, probably due to the consumption of the food contained in the water.

3. Although the number of the bacteria and the size of the colonies grown from the water which stood in the copper were very much decreased, nevertheless, a *complete* sterilization was not produced, and after four hours 294 colonies could still be counted with a magnifying glass; after eighteen hours 5, and after forty-eight hours 2 colonies still remained.

A complete sterilization of water when permitted to stand in a copper dish for forty-eight hours, and still less so when it stood only three and one-half hours, according to Dr. Harlan's directions, was not produced.

These experiments were repeated three times. The results were practically identical. The only difference being in the number of colonies.

Is it possible to sterilize infected instruments by Dr. Harlan's method? In order to test this the following experiments were made:

Instruments were infected by smearing over them fresh cultures of staphylococci and others were infected with cultures of streptococci. The instruments were then dried and thoroughly treated according to Dr. Harlan's method by first scrubbing them with a sterilized brush in sterilized water, secondly by placing them in a glass dish containing one pint of copper sterilized water and five grains of dried sodium-carbonate for five minutes, third by rinsing them with copper sterilized water in a second dish and fourth by drying them with cotton cloths that had been heated to 350° F. Accordingly the instruments should now be sterile.

The next step in the experimental work was as follows: (1) A sterilized nutrient agar-agar tube was liquified and poured into a sterilized petri-dish and solidified. A small roll of sterilized cotton was picked up by sterilized pliers and moistened by sterilized water and carefully rubbed over the instrument. If the instrument is not sterile some of the bacteria will adhere to the cotton. The cotton was then softly rubbed in parallel lines over the surface of the agar-agar contained in the petri-dish in order that some of the bacteria may adhere there, and then the petri-dish was placed in an incubator at a temperature of 37° C. for forty-eight hours. In each instance colonies developed. Some of these colonies were removed with a sterilized platinum wire, brought on a microscopical cover glass, stained with methylene blue and examined under the microscope, using the 1-12 immersion. *In each instance the same kind of bacteria were obtained, which were originally used for the infection* of the instrument. The instrument was not sterile.

2. A long test tube was half filled with nutrient gelatine, closed by a plug of cotton and sterilized in a steam-sterilizer for forty-five minutes, on three successive days. The instrument originally infected and treated according to Dr. Harlan's sterilization method, was grasped by a pair of sterile pliers and driven deep into the gelatine *mass*. The tube was closed with a cotton plug and placed aside at a temperature of 20° C. for forty-eight hours. *In each instance colonies were formed around the instrument in the gelatine mass.* Some of these colonies were carefully removed, placed on a microscopical cover-glass and stained with methylene blue. They were found to consist of the same kind of bacteria which were originally used for the infection of the instrument. As before, *the instrument was not sterile.*

3. The same experiments as described under 1 and 2 were made with instruments which were used in practice in the mouths of patients having pus-formation. Among them were two instruments which had been used in the mouth of a patient who showed very bad syphilitic ulcers. The infected instruments were first softly passed over sterilized agar-agar plates, which were then placed in an incubator for forty-eight hours in order to grow colonies of the different bacteria on the instrument. They were then treated according to Dr. Harlan's method and tested according to 1, on the agar-agar plate and according to 2, in the gelatine tube.

In each instance many colonies developed. These were subjected to a microscopical examination and were found to consist of the same kind of bacteria originally found on the instrument; that is the *species of bacteria grown from the supposedly sterilized instrument on the agar-agar plates were identical with the species of bacteria grown on agar-agar plates from the instruments which were sterilized according to Dr. Harlan's method. Again the instruments were not sterile.*

I want to state that all these experiments were not made only with one instrument, but were repeated with many different instruments and in every case the result was the same. *The instruments were found to be not sterile.*

Not only these experiments prove the incorrectness of Dr. Harlan's method of sterilization, but also theoretical considerations prove the same. For example, Dr. Harlan used copper-sterilized water and sodium-carbonate for the disinfection of the instruments. The question naturally arises, why does he use both? Is the object of the copper treatment only to sterilize the water, while the object of the sodium carbonate is to disinfect the instruments; that is, has each of them a different special purpose? Or does some of the copper contained in the water, after having sterilized it, aid the sodium-carbonate in the disinfection of the instruments? Dr. Harlan seems to think the first is the correct conclusion, because he says (Page 1112 Dental Review):

"The dry sodium carbonate is added to the water because this is simple sterile water. It is not water that would disinfect. It is dry carbonate of sodium, but you get sterile water to begin with, and if you use bicarbonate of sodium in sterilized water it will be all used before you get it to the instruments."

In this instance two chemicals are made to appear as identical, viz., the dry carbonate of sodium and the bicarbonate of sodium, which in reality are different, the first one having the formula $Na_2 Co_3$, the latter one the formula $NaH Co_3$. But Dr. Harlan states on page 1112 that $Na_2 Co_3$, not $NaH Co_3$ is meant, and so I took this as granted.

If the object of the copper treatment is only to sterilize the water, then water sterilized by any other method must be equally effective. The method of sterilizing water by boiling is certainly quicker, simpler, cheaper and especially what is of prime importance far more certain than the copper-sterilization. It is difficult to understand why copper-sterilized water should be used. The same mystery surrounds the use of the five grains of sodium carbonate in one pint of sterilized water, which is a solution of approximately 1-1500. Sodium carbonate is only a very feeble disinfectant, as Dr. Hinkins rightly stated. Dr. Sternberg (text book of Bacteriology) says page 195:

"*Sodium-carbonate.*—A solution of 22 per cent restrains the growth of typhoid bacillus and of 2.47 per cent of the cholera spirillum. The first named bacillus is killed by four or five hours exposure in a 2.47 per cent solution, and the cholera spirillum by 3.45 per cent" (Kitasate).

Hence a strong solution of 3.45 per cent of sodium-carbonate is required to kill cholera germs in four to five hours, while Dr. Harlan states that he can disinfect instruments by exposing them for five minutes in a solution which is 1-50 as strong. His explanation that if the carbonate of sodium, when used in unsterilized water, will be all used up before it gets to the instruments, cannot account for the enormous difference in strength and time found by Kitasate for the disinfection by solution of sodium carbonate. Beside this, Kitasate and the other investigators have used sterilized water for preparing the solution of sodium carbonate, the disinfection of which they tested, although they did not use copper-sterilized plates, but such which were sterilized by heat.

It seems that the principal disinfection which Dr. Harlan makes use of is done by the thorough scrubbing of the instruments, and this can be done with any other sterilized water, with or without the addition of the sodium-carbonate.

Certain it is that such mechanical cleaning alone will never give the warranty of a perfect sterilization. Whenever this is a requirement then sterilization and disinfection of instruments and materials by heat can with safety be relied upon.

This can readily be accomplished by the use of any steam sterilizer. The Rochester steam sterilizer answers the purpose for which it is intended admirably. After the instruments are cleaned with water, soap and brush, they may be boiled in soda solution, or steamed, as the operator may desire. One nice feature of this particular sterilizer is the fact that after instruments and materials have been subjected to a steam bath for fifteen or twenty minutes the turn of a lever cuts off the steam and admits only hot air to the chamber. By this method instruments are quickly dried and ready for immediate use.

NOTE.—The author wishes to acknowledge his indebtedness to Prof. R. E. W. Sommers for assistance in carrying on bacteriological experiments.

RESTORING A FRACTURED TOOTH.

BY A. E. MATTESON, D. D. S., CHICAGO, ILL.

The restoration of a fractured tooth where the fracture extends beyond the alveolar process, usually in an oblique direction, has been a perplexing problem, owing to the difficulty of obtaining a correct impression from which an accurate model of the end of the root can be produced for the restoration.

The following method in detail will enable one to do this in porcelain, when the fractured portion has not been removed.

Cut off the crown slightly below the free margin of the gum, except the fractured piece, which should be left standing about one-eighth of an inch above the gingival line.

Prepare the canals to receive the iridio-platinum dowels. I prefer making these from the square wire, shaping with a hammer on an anvil at red heat. These dowels should be made a close fit in the canals, on the sides on which stress is exerted; the protruding ends brought together in a central position of the tooth and united with 25 per cent platinum solder.

The dowels are placed in position and an impression (in modeling compound) taken of the end of the root and proximal surfaces of the adjoining teeth, Figs. 1 and 1a.

A second impression is taken, including several of the adjacent teeth, and a third impression of an equal number of the antagonizing teeth, for the purpose of articulation in making the crown.

The diverging dowels are so waxed as to permit "drawing" from the model and covered with No. 60 tin foil.

Extract the fracture and pack the pocket with temporary stopping or cotton.

Place the fractured portion and dowel (with the tin casings) in the first impression and make a model to conform to the end of the root and converging toward the apex, of cement mixed to the consistency of thick putty; when hardened sufficiently separate (the outline of the periphery of the root should be distinctly shown if the impression was correct). Carve this model to this outline so that it will freely pass between the adjacent teeth and converging towara the apex, Fig. 2.

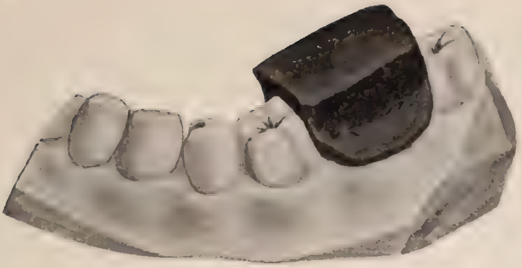


Fig. 1.

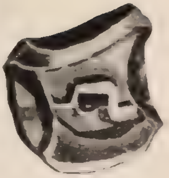


Fig. 1a.

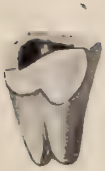


Fig. 2.

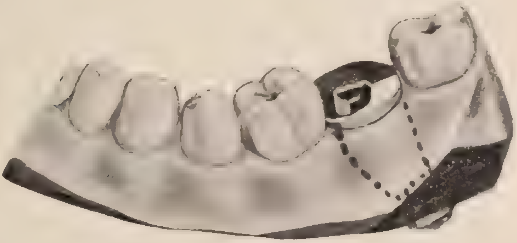


Fig. 3.

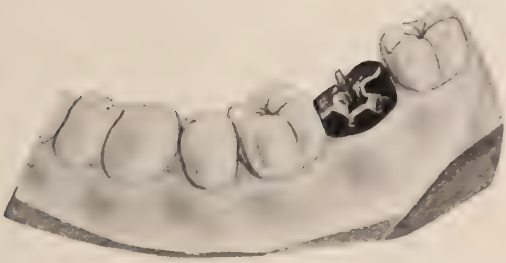


Fig. 4.

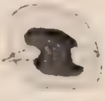


Fig. 5.

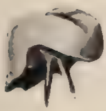


Fig. 6a.

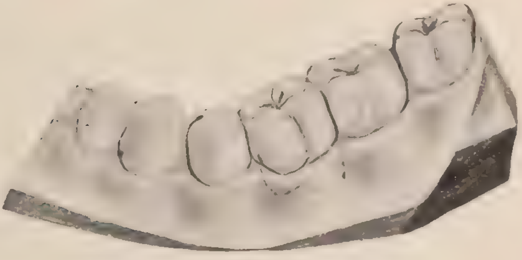


Fig. 6.

Place the fractured portion with this model in the second impression, oil it and fill with plaster, Fig. 3.

Remove the impression and cut through the model an opening to the apical end of the cement model and push it out. Remove the fracture and burnish a disk of soft platinum plate No. 36 (B. & S.), covering the end of the root; puncture to receive the dowels and press to place, remove them together, in their respective positions, invest and unite with 25 per cent platinum solder; burnish again and trim to the periphery, Fig. 4.

Select a diatoric tooth, Fig. 5. One with a large recess is preferable, as it will facilitate the packing of the body around the dowel, which should extend enough to support the tooth when ground to occlusion and alignment.

Shellac varnish the outer surface of the disk, pack the porcelain body around the dowel in the recess and build into contour; when sufficiently dry push out the cement model, carrying the crown with it. The crown will then drop from the model if the sockets have been oiled.

After the first firing the fissure formed by the shrinkage is filled and the contour again restored; two firings are usually sufficient, Figs. 6 and 6a.

More than one dowel is not demanded if the pulp chamber can be formed so as to prevent displacement from stress in mastication.

ATTENTION TO DETAIL IN TAKING IMPRESSIONS OF THE MOUTH.

BY J. A. BULLARD, D. D. S., CHICAGO, ILL.

Mr. President and Ladies and Gentlemen:

When your president asked me to read a short paper here this evening on some phase of prosthetic dentistry it was more difficult to decide on the title than to write the paper. Two things finally decided my subject: First, that although a great many dentists do not do their own prosthetic work, they are all obliged to take impressions; and second, the impression constitutes the first im-

---

Read before the Chicago-Odontographic Society, Dec., 1906.

portant step in this line of work. And again, a great many practitioners are satisfied with very poor impressions.

What I may have to say upon this subject of impression taking will be in reference to the use of plaster of paris as an impression material, as I consider it the best at our disposal at the present time to enable us to get anything near an accurate result.

First, in considering the taking of an impression of the upper edentulous mouth, we would examine the mouth as regards its height in the palate and on the buccal and labial of the ridge, and note the undercuts which occur so often on the labial surface of the ridge and high above the posterior tuberosities. Select a suitable tray which would leave about a quarter of an inch of clear space all around it, between its inner surface and the tissue, and bend it, if necessary, so as to conform to this measurement.

The next step is the building up of a ridge of wax at the posterior edge of the floor of the tray, so that when the tray is in position in the mouth the wax shall come in contact with the soft palate, just posterior to the hard palate, or a trifle back of the place where you wish to establish the plate line, so that when you have the tray in the mouth, place the wax against the tissue and swing the tray up in position in front, as if it were hanging on a hinge at the back.

The wax is very important, answering two purposes; first, preventing the plaster from running over the heel of the tray into the throat, and forcing it to run over on the sides and in front where you wish it to go. Also the pressure of the wax slightly compresses or raises the soft tissue of the palate and holds it rigid, so that if the patient should swallow or contract the palatal muscles, the plaster will not be pulled down, and also giving the plate made on a model from an impression taken in this way a tighter fit across the heel.

The establishing of the plate line in the mouth before the impression is taken is important, inasmuch as the soft palate in some mouths comes forward, attached to the palate bones in a crescent shape, while in others the hard palate runs back in quite a spine at the median line, and the plate must invariably be carried just a little farther back than the union of the hard and soft palates.

After the wax has been properly adapted, and filling the tray with plaster, mixed to a consistency which will easily flow under pressure, the tray is inserted in the mouth, placing the heel in position first with the wax against the palate, and held firmly there; then raise the front of the tray up, forcing the excess of plaster out over the front and sides of the tray, holding the tray firmly in position and beginning at the median line on the outside, the lip is molded down over the plaster, forcing it back into under cuts, and driving out the air, following it back clear to the heel of the tray on either side. In forcing the heel of the tray up first, air bubbles are more apt to form in the dome of the palate. Where the roof of the mouth is very high, fill the tray first, then wipe a spatula full of plaster up in the palate and then take the impression. Where there are deep under cuts under the lip and air gets caught as the tray is being pushed up, when the plaster begins to roll up above the ridge, take hold of the lip with the left hand and puddle the plaster back into place with it, then push the tray up. Before removing the impression from the mouth the plaster should be allowed to remain until quite thoroughly set. Although it might break with a sharp fracture, you will find it is quite easy to compress it; and by moving and wiggling an impression in the mouth where the plaster is not set hard enough, it may distort and smooth out the fine lines even without breaking it. It is not difficult to remove an impression from the mouth when thoroughly set, by raising the buccal tissues and lip from the margin all around, then run a small stream of warm water from a syringe over the upper edge. The water will draw in between the tissue and the impression and it can be very easily removed.

If you wish to convey the idea that the impression is fine, you can take hold of the handle of the tray and drag the patient around trying to pull the impression down. But to loosen it without trouble slip the forefinger of the left hand back under the cheek along the rim of impression, loosen the tissue from it and press down from the side and heel, the same as loosening a tight plate.

When too large a tray is used or the plaster is too thick, or is not molded back into position, the reflected tissues from the ridge to the cheek are pulled out from their natural position; and you will find that a plate made from an impression with the tissues in this position will be open all around the rim.

In the handling of patients with sensitive palate, and who are so easily nauseated that they can scarcely have the empty tray placed in their mouth, I have found this method of using wax at the heel of the tray invaluable.

In taking partial upper impressions, use a plaster tray high enough so that the teeth may pass down into its deepest parts, then build the wax up in the heel high enough so that when the tray is placed in the mouth and raised to a horizontal position, the wax will remain in contact with the roof of the mouth before the teeth shall strike the tray. I do not wish to use a tray with a high rim for partials, but use the lips and the cheeks to mold the plaster up on the labial and buccal sides of the teeth and ridge. This leaves the plaster rim free to break away in removing, and can be put back in position out of the mouth.

The fitting of the tray for the lower impression is of more importance than that for an upper. The lower impression tray should be so bent that the tray shall be shallow at its posterior part on its buccal flanges, and deep enough on its lingual flanges to carry down between the tongue and the ridge. And it should be long enough to go back and cover the tuberosities. There should be about a quarter of an inch space between the lingual flanges of the tray and the lingual sides of the ridge, and should be so bent that the patient would be able, when the tray is in position, to thrust the tongue forward on top of the tray.

In taking a lower impression the operator should stand in front of his patient, and after the tray is fitted and filled with plaster mixed to a proper consistency (and by filled I mean use plenty of plaster) wheel it into the mouth, the tray being set over the ridge and pushed half way down. Then have the patient thrust the tongue forward up through and above the tray, then push the tray down, holding it firmly in position with the first fingers, and the thumbs under the chin; mold the labial and buccal tissues on the outside, driving the plaster into under cuts, and forcing the air out and back, the same as for the upper.

In many cases there is a great deal of loose, flabby buccal tissue which, when the mouth is open, will fold under the heel of the tray, covering the tuberosities and part of the ridge. This may be displaced by having the patient close the mouth half way, to relax the muscles and then force the cheeks in over the top of the tray with the second fingers on each side.

In taking lower partial impressions I have for years used the Angle tray, manufactured by the S. S. White Company, intended for modeling compound, taking a pair of shears and cutting away about two-thirds of the outer rim, leaving the lingual its full length, which can be easily bent and pulled down so that it is long enough to reach down between the tongue and ridge in any case, no matter how long the teeth are. The advantage of this tray is that it is flexible, can be easily bent to fit any case, and the width of the tray inside gives plenty of room, even should the anterior teeth lean forward very much, the lingual rim of the tray will not cut off the impression.

In cases where the teeth are separated and drifted one way and another, forming interlocking spaces, I explain to the patient that I shall take the tray out first, leaving the plaster in the mouth. Then I have the tray smooth inside and oiled with a little vaseline, taking the impression, and when the plaster is sufficiently set remove the tray from the mouth, and split the plaster in line with the teeth, taking it out in sections and placing together in the tray.

I would say with this method, I care not how many undercuts, of how the teeth may stand, it is quite easy to get a perfect impression the first time.

In taking the plaster out of the mouth the patient should not be allowed to help by rooting the pieces around with the tongue, but every small piece should be removed with cotton plyers and put together in the tray.

Is it not better to spend a little time in preparing to take the impression and get a good one, than to grab a tray—any size—just so it will go in the mouth, take several impressions, and finally get one that can be fixed by building up the imperfections with wax, run the model and carve that until you guess it is about right?

A CASE OF MULTIPLE NEURITIS OF DENTAL ORIGIN.*

BY FREDERICK B. MOOREHEAD, A. B., M. D., D. D. S., CHICAGO, ILL.

The following clinical picture is of interest, both from a medical and surgical point of view. It is the first of a series of three cases which have come under our observation the past year. In this preliminary report, we believe it will be of interest to give a brief synopsis of the clinical history. The case is so classical that no comments are necessary, as the simple facts tell their own story in a most eloquent manner. The evidence is so overwhelming that there is no doubt whatever of the correctness of the diagnosis. The case strikes one at first as being a bit unusual, but if the truth were known we have no doubt that many a parallel case could be cited. We present, without comment, the clinical history, as follows:

---

* Read before the Chicago-Odontographic Society, December, 1906.

Present Trouble—Patient enters hospital complaining of muscular weakness involving all the muscles of the trunk and extremities.

Trouble began on Sunday, June 24, with slight weakness of muscles of the right hand, which he noticed about noon, and which seemed to pass off during the afternoon.

He rested well Sunday night and on the following day had a slight sensation of general weakness, but worked all day. When he came home at night his legs felt weak, so that he had difficulty in getting on the street car.

He continued to feel weak during the evening and went to bed, but slept fairly well. On the following morning when he awoke he was unable to get out of bed, because of a marked loss of muscular power which involved all the muscles except those of the head. He has been in bed since, and his condition has remained about the same. He has had a slight but constant frontal headache.

There has been no nausea, vomiting, eye or ear symptoms, disturbance of bladder or rectum, pain or stiffness in joints, tonsilitis, and no mental disturbance.

During the last 24 hours there has been a feeling of irritation in muscles, which was marked enough last night to prevent sleep. Previous to the onset of present trouble the patient has been perfectly well.

Past Illness.—Patient has had usual diseases of childhood,—pneumonia 8 years ago; denies ever having had any specific urethritis, and no luetic history obtained.

Habits.—Drinks coffee moderately, never to exceed 3 cups a day; drinks tea occasionally; has never used alcohol or tobacco.

Family History.—Negative.

Physical Examination.—Patient is a young man, 27 years of age; fairly well nourished; skin moist and pale; lips slightly cyanotic.

He appears nervous and looks worried; complains of pain in hips, thighs and legs.

a. Head.—Scalp appears normal. Forehead over right eye can not be wrinkled.

b. Eyes.—Pupils equal and regular. React to light sluggishly. React to accommodation. Movements normal and vision good in both eyes. Unable to close eyes completely. Palpebral fissure about 1/8 inch in right eye and little less in left eye; no double vision.

Nose and Ears.—Negative.

Mouth.—Left side drawn up. Unable to pucker lips. Tongue appears to come out in median line, with slight fine tremor. Can not show teeth on left side of mouth.

Pharynx.—Pillars of fauces on right side protrude downward, and uvula deviates slightly to right side; faucial reflex present.

Neck.—Posterior cervical glands palpable.

Chest.—Symmetrical; fair expansion.

Lungs.—Negative.

Heart.—Borders: Left, 1/2 inch within nipple line; upper, third rib; apex, fifth interspace.

Tones.—Normal, no murmurs, second aortic slightly accentuated.

Abdomen.—Muscles tense; no tenderness and no free fluid; liver, kidneys and spleen not palpable.

Glands.—No adenopathy.

Reflexes.—Arm and forearm present, abdominal and cremasteric present, patellar sluggish, plantar present, pectoral positive.

Sensations.—Cutaneous sensations perfect (heat, cold, touch and pain). Taste, no difference between anterior and posterior portions of tongue.

Extremities.—Upper: Power is equally decreased in both arms. Hand grip is very feeble. Muscles flaccid and soft. No tremor. Soreness on deep pressure over both arms and forearms. Lower: Muscular power fairly good, although patient is unsteady when standing. Rhomberg sign absent, although foot trembles slightly. Tenderness on deep pressure marked over lower limbs.

Eye Grounds.—Left eye negative; right disk outline indistinct and of a pinkish color. Upper temporal obliterated. Retina glistening and slightly swollen.

Temperature.—Temperature varies from 97.2 to 100.2.

Blood Pressure.—Right arm recumbent (Stanton), 145 m. m. H. g.

Blood Examination.—First examination of blood made before treatment was instituted. Erythrocytes pr. cu. m. m. (Thoma-Zeiss) 4,500,000. Leucocytes (Thoma-Zeiss) 13,500. Haemoglobin (Von-Fleischel) 80 per cent. No poikilocytosis.

Widal Test.—Negative.

Urinalysis.—First urinalysis made before treatment was instituted. Twenty-four-hour specimen: Slightly cloudy, straw color, acid reac., sp. gr. 1020, no nuc. alb., no sr. alb., no sugar, no bile pigment, no blood coloring matter, no casts, few epithelial cells, no erythrocytes, few leucocytes, no urates or bacteria, no crystals.

On a more careful examination of the mouth this condition of affairs was noted. The teeth were badly decayed. There were large cavities in the buccal surfaces of the lower molars and bicuspids. There was a marked deposit of tartar on the lingual surface of the lower anterior teeth.

The gums were markedly congested and of a purplish hue. There was a discharge of pus from a small fistula above the right upper lateral incisor. By making pressure on the palate on the right side, nearly a dram of thick, foul-smelling pus could be expressed. The tooth involved was pulpless. The fistula led into a large cavity. The antrum was not involved, although the abscess cavity extended in a backward direction, and contained small pieces of necrosed bone.

Bacteriology.—Cultures were made on two successive days from the pus, and a pure culture of a diplococcus arranged in long chains was obtained both times.

A guinea pig and a rabbit were inoculated, subcutaneously between the scapulæ, with a 24 hour culture of the organism. Neither showed any symptoms until the third day, when the guinea pig was found unable to move, but with active reflexes. The next day the rabbit had paralysis of the hind legs. On the fourth day they both died—the guinea pig in the morning, the rabbit in the evening.

On post mortem examination there were no gross changes found to account for death. Sections were made from the spinal cord and lumbar plexus of each animal. The microscope showed:

1. An increase of lymphoid elements between the bundles.
2. Some degenerative changes in the axis cylinder.

3. A proliferation of the neuclei in the sheath of Schwaan.

Treatment.—The treatment was very simple, and consisted in first, the cleansing, disinfecting and filling the root canal of the lateral incisor. Second, under nitrous oxide gas the abscess cavity was fully opened, the opening made being large enough to admit the tip of the little finger. The cavity was irrigated and packed with strips of iodoform gauze, saturated with a 10 per cent solution of comp. tinct. benzoin. For a time it was irrigated and re-packed daily, and finally allowed to close.

Two weeks after the operation the blood findings were somewhat different: Erythrocytes, 5,312,000, leucocytes, 8,000, Hb. 91 per cent (Dare).

An examination of the urine showed the following: Sp., gr. 1016; color, light amber; clear; no casts; no leucocytes; no erythrocytes; no epithlial cells; few amorphous urates; no bacteria.

Subsequent History.—From the day of the operation the patient began to improve, although slowly at first. The headaches disappeared entirely. At the end of the first week the patient was free from pain, and could take several steps aided by a cane.

At the end of the second week he could dress himself and walk unaided. At the end of the fourth week he left the hospital, walking five blocks to his home. He continued to improve and is today after four months entirely well. No internal medication whatever was employed, beyond the use of cathartics.

Inoculation experiments on mammals are being conducted, with a view to determine, if possible, the pathogenicity of the organism isolated from the case. We are thoroughly convinced now that the absorption of toxines was the true etiologic factor in the premises.

SOME REASONS FOR INSTITUTING A PUBLIC MEANS OF PROTECTING THE PROFESSION AGAINST THE USE OF POOR ALLOYS.*

BY MARCUS L. WARD, D. D. SC., DETROIT, MICH.

It was with some reluctance that I consented to appear before this society and present the oft discussed, by many much despised, and yet little understood subject of dental amalgam alloys, lest some of your members who are conspicuously well informed on this subject offer adverse criticism to my work.

---

*Read before the Chicago-Odontographic Society, January, 1907.

I confess at the outset that I am human, consequently not infallible, but, in return, I beg you to acknowledge that the incentive to criticism does not necessarily imply wisdom on the part of the critic, and often, not even good faith or truth if he is interested in the manufacture or sale of alloys.

Everyone who is acquainted himself with the history of dental amalgam alloys knows at the beginning, that a work of this kind, which is intended to divulge some of the so-called trade secrets which have so long barred its progress, will be encounted by numerous difficulties, and is not deserving of censure where kindly criticism would serve to better educate the profession.

It is therefore my sincerest desire that all sectional differences and petty jealousies be laid aside and those who owe everlasting debts of gratitude to their preceptors and teachers, will pay them in other ways than by defending their alloys without well founded reasons for the same. Let each one add his mite, that this meeting of one of the best informed societies in this country be a profitable one to the profession.

With the advent of a public means for testing alloys, as recently suggested by Dr. Black, there is marked the final decay of some of the wilful misrepresentations on the part of some of the manufacturers, baseless accusations of dishonesty on the part of others, and censure to writers on this and other similar phases of this subject.

There is little doubt but that this is one of the conditions that has retarded our progress for years, and if continued after a public means has been provided for testing, will prove a boomerang that will rebound only to smite the throwers.

We can conceive of an article of this kind working a hardship on the makers of inferior products by giving information to the unskilled, whereby they may begin the manufacture of a product for competition.

It is from this element only that I expect criticism for telling what I know, since the better manufacturers are being isolated by such work, and are receiving their reward for conscientious efforts.

If we were to ask the profession today why a gold filling was better than an amalgam filling, what per cent would reply with intelligent answers? It would be surprisingly small indeed, but the blame cannot *all* be placed upon the manufacturers who have thus wrangled and quarreled.

While we have all seen and read many of the ridiculous claims made by the makers of some of our alloys, and listened to the pleading of their agents who are so solicitous of our welfare, we cannot place our *own* ignorance and disappointment at results obtained by using their products at *their* feet.

We must trace this condition of affairs to our own doors, because no one in the profession has brought the subject to a scientific basis which compares real favorably with those in the associated sciences. Neither have the teachers in our dental colleges been able to present the subjects like teachers in engineering are teaching the alloys of steel, brass, etc.

We should for the present, at least, have some means of knowing whether an alloy is reliable or not, without having to wait the test of time in the mouths of our patients. We should at least know the composition of our alloys, the reasons for inserting some metals and excluding others, and the manipulation necessary to bring out the best qualities.

The physician cannot combat disease by giving some grippe tablets for grippe, rheumatism tablets for rheumatism, and so on through the list of ailments. He must, first of all, know the composition of the tablets and the action of each ingredient. Second, he must have confidence in the maker of the tablet to place in them what he has labeled on the bottle.

While many of the greatest of the world's physicians are still inscribing their loftiest thoughts in the form of presoriptions, they, too, are using ready-made prescriptions in the form of tablets, capsules, etc., but in every case the composition is known and the maker must be one of repute. Do we combat disease with alloys of known composition? No. What would it avail us anyhow, since only about one in every hundred knows the action of each ingredient, and understands that with dental amalgam alloys other things than the right composition are required to make a good alloy. Do we always buy alloys from makers in whom we have the utmost confidence? A few do, while hundreds are buying and using almost anything that comes along, this being particularly true in the smaller places.

It is not uncommon to see men using alloys made by those whom they would not trust with any other operation. I know of some makers of alloys whose average intelligence is far below par, let alone any special training necessary to enable them to make perfect products, and yet scores of dentists are using their alloys.

Can we imagine a physician prescribing drugs made by a man who does not know quinine from arsenious acid? No. But we can find a similar condition of affairs in our profession regarding the sale of alloys.

It is obvious that there is little analogy between the two so far as danger to human life is concerned, but the idea of professional men buying supplies for mercenary or other reasons from manufacturers who had better be pushing a wheelbarrow is the same. It is the excuse for their existence.

Scores of times have I been told by dentists throughout the country that they could see little difference between the alloys made by the "hinky" dealer and those made by one who had a reputation at stake.

While this is true with a great many, there are few who are closely observant and are able to distinguish between the two after some little time. The men who are unable to distinguish between the two classes of alloys, as a rule, do not use any one make long enough to become familiar with its working qualities, nor to see the results of his labor before he is trying some other make.

They are affording themselves every opportunity to change, and continually expecting to find that some fellow who could not make a living in practice, nor whom they would trust with anything else, to have discovered an alloy from which all the hitherto objectionable features had been eliminated and all the desirable ones added. How ridiculous for men to practice for year aimlessly buying and blindly inserting anything that comes along with little or no concern for the safety of the teeth which have been intrusted to their care.

It is to be hoped that such men will, in the near future, be given a chance to conserve the energy which they have been expending in searching for better alloys, and apply it to the arts of observation, that the next few years will not be ones of turmoil and impeded progress to them, with no entries on the credit side of the book to represent benefits received.

We have some makers of alloys who, while they differ somewhat as to what constitutes a good alloy, are putting their best energies into experimenting and manufacturing good alloys, that they may maintain the reputation that they have made in this and other lines, while on the other hand we have other classes who have begun manufacturing alloys with no training whatever, who have made little or no progress since beginning the work, who admit that they are "in it" for the money, and yet they are just the ones whose highest ambition is to discredit the professions, depreciate the motives, and disparage the achievements of one who attempts a work of this kind.

I have in mind a man who began by selling a few specialties made by others, but in a short time began making his own specialties, among which were dental alloys, because he was not satisfied with the profits of selling alloys made by experienced men. The ignorance that he displayed was horrifying, to say the least, and would require too much space to be given here, though he is selling pounds of alloy.

It is with pride that a public committee for investigation would keep the alloys made by such men as extinct as possible, till their maker merited the recognition of a manufacturer.

CONSCIENTIOUS MANUFACTURERS DIFFER.

It is quite evident that many of our makers of alloys whose past reputation and attitude toward the future are beyond question differ as to what constitutes a good alloy.

There is made in this city an alloy which with many others I have watched closely and analyzed several times during the last three years. Its composition has approximated silver 68 per cent, tin 26.50 per cent, copper 4.20 per cent, and zinc 1.30 per cent every time I have analyzed it. There is another one made not far from this city which I have found to contain 65 per cent of silver, 27 per cent of tin, 4.50 per cent of copper, and 3.50 per cent of zinc.

Let us notice that these two alloys conform quite closely to the general rule—that our best hard alloys contain from 65 to 68 per cent of silver, 26 to 28 per cent of tin, 3 to 4½ per cent of copper, and 1 to 2½ per cent of zinc.

Let me repeat again that I firmly believe that each of the manufacturers of these two named alloys is honest in his conviction that he has a better product that his competitor.

After some observation I am led to believe that each one is justified in making such claims, though I wish to qualify the statement by saying that each one is measuring the quality of his alloy by a different standard.

The maker of the first alloy who places 68 per cent of silver in it, and cuts it coarsely, gets a products whose crushing resistance, when first made, is approximately 500 pounds on a filling one-eighth inch in diameter and one-eighth inch high, while a filling of the same dimensions made from the second alloy will fall at least 100 pounds below the first.

Obviously, the maker of the first can claim superiority over the second in this one particular, viz., strength. On the other hand, the maker of the second who places 3.50 per cent of zinc in his alloy and cuts it finely obtains a product which works a little easier, sets a little slower, and retains a little better color in most mouths, due to the fact that the sulphide and oxide of zinc are both white.

Obviously, he claims superiority over the maker of the first in this respect. He is correct, since the strength of his alloy is sufficient to resist the ordinary forces of mastication, and the setting qualities are such as to afford a little more time to insert the filling, rightfully claiming that many a filling was a failure because the alloy set too rapidly.

This comment applies to these two alloys as they are being made today, and is not intended to be a comparison of them when cast, cut and annealed, under different conditions.

Both of these alloys are free from shrinkage, hence no claims of superiority are made by the maker of *either* in this respect.

The maker of the first claims that zinc is the disturbing element in our alloys, and must be kept down to about 1 per cent or the filling will expand indefinitely, resulting in spheroided and otherwise distorted fillings with protruding borders. The maker of the second believes the same thing about the action of zinc, but let us notice how he prevents these indefinite expansions and continues to use 3.50 per cent of zinc.

This brings us to the question, why does zinc cause these indefinite expansions? From what evidence we now possess we must assume that dental amalgam alloys composed of silver, tin, copper and zinc, in the proportions previously mentioned, are not definite chemical compounds with properties differing from the constituents of which they are composed.

We know that most metals are capable to some extent of existing in a state of chemical combination with each other, but, as a general rule, they are united by feeble affinities, for it is necessary in order to produce energetic union that the constituents should exhibit great dissimilarity in properties.

It is probable that these metals do unite in definite proportions, but, since they dissolve in all proportions in the melted metals, and we are able to identify the action of each constituent in the finished product, it is indeed difficult to say whether they are solidified solutions of one metal in another, mechanical mixtures, feeble chemical combinations, or a mixture of all three.

However, we have plenty of evidence to show that a portion, at least, of each constituent retains its properties through the melting and casting process and exerts either a beneficial or detrimental effect upon the finished product in the same manner as the constituent itself is beneficial or detrimental.

The amalgamation process as practiced by dentists is only a partial one. We can readily see that mercury will not completely dissolve alloys cut as coarsely as we are getting them at present unless the temperature is high or a much longer time is spent in working the alloy and mercury.

Most operators triturate the alloy and mercury until they are coherent enough to be turned into the hand. They then work it in the palm of the hand a little and pack it into the cavity. The result is that only the surfaces of each little particle of alloy are attacked by the mercury, leaving a large portion of each particle undissolved.

These undissolved particles, rather than any one constituent, are the real causes of the unstability of our amalgam fillings, because the mercury in loose combination with the tin, and the excess which is mechanically held in the mass at the time of mixing, continues to break down the undissolved particles for months after the filling has been inserted, thus increasing many times the movement which accompanies the mixing of the alloy and mercury, whether it be shrinkage or expansion.

With this in mind are we to be chagrined at finding some of our fillings which gave slight expansions at the time of inserting to be spheroided or otherwise distorted in a few years? And can we not see that the metals which unite with mercury at ordinary temperature are the ones which facilitate the breaking down of any undissolved particles of alloy?

The metal which unites with mercury *most* readily at ordinary temperature is zinc, hence, the maker of the first named alloy who says that zinc is the disturbing element because it does not lose its identity in the melting and casting process, is partially right in the assertion, but the maker of the second who continues to use larger percentages of zinc and cuts his alloy much finer, overcomes much of this action of zinc by obtaining a more perfect amalgamation at the time of inserting the filling.

After keeping these two alloys under my observation for nearly two years I became convinced that there was little difference in the two so far as stability was concerned, though you will see that there is more than double the amount of zinc in one, that there is in the other.

LABORATORY TESTS AT DIFFERENT TEMPERATURES.

Laboratory tests which are carried on at room temperature are not quite practical, because they do not indicate *how much* movement takes place. They do indicate, however, whether the movement is shrinkage or expansion, thus enabling the maker to protect us against a possible occurrence of the former.

A given bulk of an alloy which expands 1-10,000th of an inch at room temperature in a given time will almost invariably give a greater expansion in the same time if the test is kept at possible mouth temperature, viz., 120° F. to 140° F.

The analogy between this, and aiding other chemical actions with heat, thus becomes quite apparent. These two alloys were purchased in open market and six fillings made from each one. The proportions of mercury and alloy were carefully determined. These proportions were weighed out for each filling and triturated in a mortar 1¼ minutes, after which they were worked in the hand 3½ minutes. While this was a shorter time than it should be triturated, it is about the time consumed by most dentists for this operation.

The packing was done with flat ended instruments, using steady but heavy force immediately after the mixing. The mass did not lie still a moment. Readings were now taken on six of the tests (three of each alloy) with the fillings and micrometer at room temperature (70° F.).

The other six (three of each alloy) were read with the fillings and micrometer in the thermostat at body temperature (98° F.) and left there for twenty-four hours, after which time the temperature was raised to possible mouth temperature (130° F.) and kept there for nearly two years.

Let us notice that three fillings of each alloy were thus kept at room temperature, and three of each kept at body temperature for twenty-four hours and then at possible mouth temperature (130° F.) for the remainder of the time.

The reason for subjecting the second set of fillings to 98° F. for twenty-four hours was that I wanted to take advantage of the doubt that existed in my mind as to the rapidity with which mercury will diffuse and uniformly distribute itself. This I did by keeping the tests at a low, rather than a high, temperature during the initial setting, the time when the mercury would diffuse most rapidly, because it is not mechanically prevented from diffusion by early crystallization of certain parts of the filling.

Every one of the twelve fillings gave expansion varying from 1-20,000th to 3-20,000th of an inch during the first twenty-four hours. The next thing that I observed was that the tests which were kept at room temperature gave no further expansion after the first ten days and practically none after the first three or four days, while the ones kept at possible mouth temperature (130° F.) expanded for nearly two years.

The total amount of expansion from these two alloys was not so different, though the one which contained 3.50 per cent of zinc cut a little finer and annealed a little more, had the preference, and ceased moving any appreciable amount after the first six months. The one containing only 1.25 per cent of zinc continued to expand much longer than the one containing 3.50 per cent of zinc, I think for no other reason than that it was cut coarsely, which resulted in its being more incompletely amalgamated at the time the test was made, and the simple fact that it did not contain *more* of the constituent which amalgamated easily.

SOME CONCLUSIONS THAT I MUST NECESSARILY DRAW.

1. The best manufacturers are conscientious and justified in making claims of superiority one over the other.

2. Many of the best manufacturers are measuring their alloys by different standards, which often results in one claiming superiority over the other, while the superiority thus claimed was made at the sacrifice of some other property.

3. If a public means for protecting the profession were instituted similar to the one in the medical profession, the results of which are published in the *Journal of the American Medical Association,* these claims of superiority would be well understood.

4. That zinc is not as much of a disturbing element as incomplete amalgamation and imperfect annealing.

5. That temperatures of 130° F. caused by hot foods and drinks, facilitate the diffusion of loosely and uncombined mercury.

6. That alloys made after the plan of the two previously mentioned must be cut finer, regardless of the decrease in strength, and dentists must work them more thoroughly if a *greater* degree of stability to our amalgam fillings is to be obtained.

7. That alloys which are advertised to expand only 1-10,000th of an inch do this during the initial setting, and that this expansion is increased during the final setting.

THE STRENGTH OF OUR ALLOYS VARIES.

I have just discussed how a filling which was advertised to give only a slight expansion could result in an enormously expanded one after some months because of the incomplete union of mercury and alloy, accompanied by increased temperatures in the mouth.

I think you have all observed that many of your fillings have more than filled the cavity, appeared spheroid, and the borders been raised after a year or two, hence, you can easily comprehend that a change has taken place.

I desire now to call your atention to the same kind of a phenomenon which occurs in the strength of this class of alloys.

Many of you have observed that many old amalgam fillings cut more easily than new ones. Let me now discuss the changes in strength which have occurred up to date in two of our best quick setting alloys. On the 20th of January, 1906, I made two hundred fillings from two of the best alloys I could purchase. They were made in a mold, which held five fillings and worked exactly as I did the tests previously mentioned. Five fillings were thus made at one mix and the mass was kept moving by my assistant while I was packing, not allowing it to lie still a moment before it was packed.

Six of these fillings were broken at a time with the dynamometer, at varying intervals, from that time up to the present time. An average of the six fillings thus broken was taken as the crushing resistance of the alloy at that time.

Alloy No. 1—	Per cent.	Alloy No. 2—	Per cent.
Silver	68.00	Silver	65.50
Tin	26.50	Tin	25.50
Copper	4.20	Zinc	3.00
Zinc	1.30	Copper	6.00

Age of Alloy.	Crushing Resistance. Alloy No. 1,	Crushing Resistance. Alloy No. 2,
1 day	435 lbs.	452 lbs.
2 days	478 lbs.	462 lbs.
4 days	485 lbs.	453 lbs.
24 days	493 lbs.	447 lbs.
42 days	497 lbs.	447 lbs.
85 days	475 lbs.	433 lbs.
205 days	414 lbs.	367 lbs.
341 days	344 lbs.	310 lbs.

First, let us notice that the alloy containing the higher percentage of silver did not reach its maximum strength until some time after the one containing the higher percentage of zinc, though it was higher when once reached.

We will now recall the fact that in the test previously given for permanency of form, the alloy containing the higher percentage of zinc stopped expanding some time before the one containing the lower percentage. A similar phenomenon occurred here, the one containing the higher percentage of zinc reaching its maximum strength first.

These two tests illustrate, as do a multitude of others that I have made, that the time when the maximum strength of an alloy is reached depends entirely upon the ease with which it amalgamates, and this, obviously, depends upon the composition of the alloy.

We will further notice that the filling is strongest when only a part of the filings are dissolved in the mercury. Rarely, indeed, do we get much strength to a filling made from this class of alloys within the first twenty-four hours and usually forty-eight hours lapses before the maximum strength is even approximated.

As we have just noticed, it may be a month or two after which time the strength begins to lessen. We can imagine, from our present knowledge of the effect of mercury on its alloys, that such a change would take place in the strength of our alloys.

If we could limit the action of mercury to the surface of each little particle of alloy we would thereby obtain a filling composed of little particles of alloy held together by a cementing substance.

Since the filings of the alloy are much stronger than "the filings of alloy and mercury combined," to make a cementing substance, we would by thus limiting the action of mercury to the surfaces of the filing, obtain a much stronger filling, and at the same time make another great stride by obtaining a filling more permanent in form.

COPPER ALLOYS.

The copper alloys furnish us very striking examples of what may be accomplished in permanency of form by either completely uniting the mercury with the filing or by limiting the action of the mercury to the surface of the filing.

How many of you ever saw a copper amalgam filling that had expanded or was in any way distorted? Certainly, none of you, because in one method of preparing the alloy the copper is completely united with the mercury, while with the other method of preparing, the mercury is limited to the surface of the filings.

You have all seen copper amalgam fillings that had apparently washed or dissolved away. This is a common occurrence because copper, while it retains its luster very well in the dry air, is quickly covered with a green layer of basic carbonate in moist air, and becomes blackened by contact with sulphureted hydrogen.

Either the carbonate or sulphide would be dissolved or worn away only to leave a new surface to be attacked again. A continuation of this process gives us what is commonly called "cupping-out" of copper amalgam fillings.

From this little diversion let us return to the permanency of form of copper amalgam fillings. If we try to unite copper and mercury directly at any temperature possible in the mouth, we meet with failure. They do not unite. However, copper does unite with mercury at these temperatures when aided by the electric current or acidulated solutions.

The maker of these alloys may unite them by either means he chooses, and all that is required of the dentist is to heat the alloy and insert it, after which it slowly recrystalizes.

If he has completely amalgamated the two in definite chemical proportions to form the compound (Cu Hg) there is no expanding, spheroiding, etc., after the mass has been placed in the cavity. These bulk changes, if there were any, took place at the time of amalgamation, leaving us only the co-efficient of expansion to contend with. Since only a low temperature is required to soften the mass, we practically eliminate bulk changes.

If, on the other hand, the copper amalgam is prepared by triturating copper filings with mercury, and a little mercuric nitrate, only the surfaces of the filings will be attacked.

We have then undissolved filings held together by a cementing substance, a mass which is physically quite analogous to the one so often made from our high grade alloys composed of silver, tin, copper and zinc, though it is more stable in form, because the undissolved portions of filings are insoluble in mercury alone.

It is not my intention to decry the high percentage silver alloys, and laud the copper alloys, but, rather, to show the necessity for a more complete union of the filings and mercury at the time of inserting the filling. Since with our high grade alloys, as they are now made, the only alternative is to strive for a more complete union.

It is out of all reason to insert copper amalgam fillings in anything but the most desperate cases, when we have the variety of other materials that modern dentistry affords. Nevertheless they furnish a most striking example of permanency of form.

Some conclusions:

1. That the strength of alloys varies with age.

2. That they also vary with the amount of alloy dissolved in the mercury at the time of making a filling.

3. That their crushing resistance is *very low* for the first few hours after being made, and is often so for a day or two.

4. That the period of greatest crushing resistance does not last but a month or two.

5. That the decline in the crushing resistance is simultaneous with and dependent upon a continuation of the amalgamation process after the filling has been made.

6. That regardless of this decline in crushing resistance, we should work such alloys more thoroughly, because they are not only more permanent in form, but sufficiently strong for practical purposes.

PLASTIC ALLOYS.

One of the great drawbacks to the success of the hard alloys is that a majority have never mastered their working properties.

Scores have tried them faithfully and conscientiously and have done good service with them, while scores of others have catered to their personal likings and demanded easier working, slower setting alloys. Naturally the manufacturers have responded promptly.

In looking over some of the leading manufacturers' products today we find that almost every one of them is making at least one high per cent silver alloy and one plastic alloy, for example:

Manufacturer—	*Name of High Percentage of Silver Alloy.*	*Name of Low Percentage of Silver Alloy.*
L. D. Caulk & Co.	20th Century	Par Excellence
Dental Protective Supply	Fellowship	Ductile
H. D. Justi & Sons	Triumph	White Alloy.
Frink & Young Co.	Permaneo	Standard.
Garhardt Dental Mfg. Co.	Acme	Standard White
Ransom & Randolph Co.	Micrometric	Success.
Gideon Sibley	Rego	Sibley's G. & P.
Consolidated Dental Co.	Superior	Crescent.
S. S. White Mfg. Co.	True Dentalloy	Globe.

And so it goes all through the list of dental manufacturers' products.

The most of the so-called plastic alloys make the most unstable fillings that can be placed in the mouth. They are positively the worst. Their composition is based on the dual movement, 50 per cent of silver and 50 per cent of tin.

To avoid the slight shrinkage which occurs in the early stages of setting most of the manufacturers have added about 1.50 per cent or 2 per cent of zinc. They have been successful in this respect, though their crushing resistance is low, they flow badly and are cut coarsely.

A coarsely cut alloy composed of about 1.50 per cent of zinc and the remainder equally divided between silver and tin, is free from shrinkage, retains a good color, and works easily, but is capable of more expansion in the mouth than anything I know of.

Let me suggest a test which any of you can try. Prepare a cavity in a fairly strong extracted tooth and fill it with one of the plastic alloys. Let it set twenty-four hours, after which polish the edges smooth and make the center of the filling level with the borders, so that you can detect the spheroiding caused by the expansion of the alloy. Place it near a heater, where the heat approximates 130°

F., and leave it there a week or two. If you are fortunate enough to have some test tubes, a micrometer and a thermostat, by all means use them.

First notice that the tooth is sufficiently strong to resist the expansion of the alloy, and as a result you get a spheroided filling, caused by the lateral and downward expansion meeting with resistance in the walls of the cavity, thus directing these forces toward the center.

Let the filling remain near the heat as long as you get an expansion, and see if you are not surprised at the amount. It is not my intention to cast aspersions at the makers of this class of alloys, since almost every one of them have a better alloy which he is perfectly willing and anxious to sell. It is, however, a reflection upon the man who uses them, and any one of you can by a little observation detect them in a short time.

DIFFERENT METHODS OF DETERMINING SHRINKAGE AND EXPANSION.

Another thing of which I wish to speak is the proper method of measuring shrinkage and expansion. When prominent men write articles for our foremost journals, in which they state that such alloys as 20th Century, Fellowship, Acme and True Dentalloy shrink, I think it is time for disinterested parties to explain *why* such results were obtained.

When Townsend's alloy, which at the time the article was printed, April, 1905, was composed of 42.02 per cent of silver, 57.56 per cent of tin and .42 per cent of copper, is claimed to be free from shrinkage, and the above named alloys are said to shrink, I am sure that it is another case of measuring a product by different standards.

When it is claimed, not only by the writer of this article, but by others, some of which are here in your city, that the specific gravity method is the right one, and that the products of some of our very best manufacturers shrink, we must all "take notice," since I am just describing to you how the most of these alloys expand indefinitely.

Even the most casual observer must be impressed with the injustice of such contradictory articles, which serve only to confuse the general practitioner.

The writer of the article previously mentioned found these alloys to shrink when tested by the specific gravity method, while I have every reason to believe that the makers of these alloys tested them with the micrometer and found them to expand. The general practitioner asks, "Which one is right?"

I am willing to admit that the micrometer gives only linear measurement, and that excessive expansions may be obtained by converting lateral expansions into a flow of the metal upward by making the tests in sufficiently resistant receptacles, and, further, that the specific gravity method of determining shrinkage and expansion is the one generally adopted by physicists.

However, I am not ready to admit that the micrometer is not the proper device for measuring the shrinkage and expansion of dental amalgam alloys. Let me call your attention, if you have not already noticed it, to the fact that shrinkage may be either a change in volume or a change in dimensions, and that the two are distinctly separate in some parts of this work. In other words, the volume of a body may be either "real" or "apparent," the real volume being the space occupied by the actual substance of which the body is composed after making all allowance for the pores or interstices that may be present on the surface of the body, while the apparent volume is the space included within an imaginary surface which just takes in the body interstices and all.

If we determine the amount of water displaced by a certain piece of material we say "we have determined its volume." If we cut some holes in the surface of this "same piece of material" and then immerse it in water, we find that it displaces much less water than it did before, naturally we say its volume is less, but we have not changed its dimensions one iota.

When an amalgam filling is packed in a cavity or other receptacle the surfaces are smooth and glistening with mercury, which has been forced there by pressure applied to the center of the filling. All pores or interstices which may be present on the surface between pieces of undissolved alloy are filled with mercury, making the surface bright and smooth.

If we examine these surfaces a few hours later we find the same places which were particularly smooth and bright now roughened and covered with pores and interstices. This is seen with the naked eye when working with coarsely cut, imperfectly annealed high per cent silver alloys, which dissolve so slowly that there is but little alloy dissolved in the mercury at the time of mixing.

It is quite evident that if an amalgam filling made from 20th Century, Fellowship, Acme and True Dentalloy, or any others of this class, were subjected to a specific gravity test, they would show a decrease in volume, especially if they were amalgamated about half enough, thus leaving large particles of alloy undissolved. This test would measure the pores and interstices formed on the surface during the first few hours, caused by absorption to the center and dryer parts of the filling of the mercury which filled these pores during the first few hours.

On the other hand, if these same alloys were worked thoroughly and measured with a micrometer, they would show an increase in the dimensions. I therefore find it true in my work that a given alloy which shows a slight expansion in the early stages of the setting when measured with the micrometer will give a slight shrinkage if measured by the specific gravity method. In other words, the dimensions may increase and the volume decrease at the same time.

From what has been said it may be seen that those who use a micrometer regard shrinkage as a decrease in magnitude measured along a diameter, while those who use the specific gravity method regard shrinkage as a decrease in volume, which includes the pores and interstices formed along such a diameter. In other words, the men who use the specific gravity method are measuring the mercury which is being taken from the surface to the center and dryer part of the filling forming the air spaces on the surface out of what was a few hours before filled with mercury.

In conclusion let me briefly speak of the air spaces spoken of and shown you by Dr. Callahan, of Cincinnati, at your March meeting. He showed you that these spaces were not only on the surface but along the margin of your fillings. You observed them on the screen. You talked about them in your discussion, they are certainly there. Dr. Black stated that "the best method of making amalgam fillings tight is to use all the force you can and pack it along the walls with a very small instrument," and "if we could work amalgam as well to the walls of our cavities as we can gold, it would stand as well," that "fillings may contain as much as 12 per cent of air." The statement of Dr. Black that we should use plenty of force and pack the alloy along the walls with small instruments is certainly one to be considered.

The one made by Dr. Callahan with regard to the rotary burnisher is not to be ignored, since it, too, gives a thoroughly packed filling, though I would add to both statements that the air must be well removed from the mass by thoroughly working it.

The statement of Dr. Black that "if we could work amalgam as well to the walls of our cavities as we can gold it would stand as well" represents in a general way the feeling of the whole profession today. A large per cent of the men of the profession feel that their successes are due to their getting the filling well packed and their failure due to the lack of adaptation.

There is no doubt but that this is true in many cases, though I most firmly believe that it is not quite the root of the evil, nor the real reason why amalgam is a poorer filling material than gold, for the following reasons:

1. Our present amalgams will not lie still after they have been inserted in the cavity and the borders finished. There is absolutely no reason why they should when the alloy is but partially united with the mercury at the time of mixing and mouth temperature is sufficient to allow the union to be completed, remembering, of course, that all chemical actions are either retarded or accelerated by changes in temperature.

Gold does lie still after being placed in the cavity. There is no mercury or other substance to unite with it. It simply welds in the cold.

2. Amalgam fillings are both oxidized and sulphidized in the mouth. These oxides and sulphides are dissolved or worn away, causing a loss in material. When this loss of material occurs at the border of the filling it no longer fills the cavity and often presents a very ragged edge. Gold is not oxidized and sulphidized in the mouth. Its borders are immune to the attack of almost everything. I have called your attention to a few of the more glaring misunderstandings and trust that this society will use its every influence to bring about a means of settling them and protecting the profession against the use of poor alloys.

PRESIDENT'S ADDRESS.*

BY J. E. HINKINS, D. D. S., CHICAGO, ILL.

From the days of immemorial it has been the custom of all organized bodies—be it a political government, a commercial or scientific organization, be it ever so small—it is demanded from the head of such government or such commercial or scientific organization, to deliver an annual message or address, a duty which I am called upon to fulfil, regardless of my ability, and whatever errors are made by such delivery may be recorded for generations to come. For words are like milk, which, once being drawn from its original source, can never be returned again. At this age of remarkable discoveries and wonderful developments in science on might not at ease deliver his sentiments without fear that some one will reply to his errors; as times are not as they used to be.

Three hundred years ago could a person have been put to sleep and have continued in that state fifty years, on awakening and returning to the schools of dentistry, he would have found the same text-books, the same mode of teaching, the same elements of thought, perhaps without a single change. Now let a person remain in seclusion for not more than five years; on returning he would find many changes in the teaching and practice of dentistry.

In a period of half a century many discoveries in both mechanical and scientific inventions have been made that brought dentistry to our present status of attainment. I do not know of any occupation or profession that deserves a higher measure of respect than the dental profession. Our occupation is not an indolent one. Let us look at its history and study the magnitude and quality of its labors. Why has it done all this? What would it have done if it had not ambition and aspiration? What profession is there that has accomplished anything for which mankind is the better? Every branch of modern science, every field of modern research, every pursuit which has been under the subject of modern study has been cultivated and utilized that made dentistry a scientific as well as a mechanical pursuit that equalizes all branches of human knowledge.

---

*Read before the Odontological Society of Chicago, November, 1906.

Dentistry is a national pride; every American is proud of his compatriot, the dentist. One may travel from the Orient to the Occident or to every principal city of the five continents, and he will find everywhere the American dentist, or at least one who has attained his training in an American school of dentistry. The fame of our schools is spread throughout the world. Numerous as they are, they are on a sound medical education—I say medical because we are only a subdivision of medicine and hope to see the time when all concerned in the branches of science of medicine will recognize it in the same light and will acknowledge the errors of the past.

The medical profession has been divided into specialties and has become unavoidable to subdivision. It is an undeniable or self-evident fact that at the present day medical science has expanded to such an extent that its intelligent cultivation as a whole by one person has become impossible.

It is not everybody that has the dexterity; therefore the old Latin motto, "*Non Omnia Possumus Omnes*"—"All men can't do all things." The brain that is trained to one certain subject will not easily grasp another. The hand that is trained to one special mechanism can not easily adapt itself with the same dexterity to another. Hence specialism can not be overlooked. We must stand together and work hand in hand. Sooner or later we will form one column; otherwise we will destroy one another and the entire profession will sink to a level of a trade where every competitor will supplement his skill as an artisan by all the tricks of cunningness and diplomacy of which he may be able. Then we will be broken up into fragments, each little segment claiming to be an independent organ until the entire column will be made up of detachments which will ultimately destroy one another, because man honestly differs as means employed to subdue disease, be it of the rectum or the mouth.

Aside of the emolument, we are all working for a common cause to ameliorate suffering humanity. The subdivision of medicine for the emolument of a petty individual deserves very ill of society; some of the specialists are like the socialists, who are always willing to divide that which they do not possess.

A socialistic speaker while addressing an audience had about converted one of his auditors, who arose to his feet and said: "I am about to believe as you do; but let me understand you right; this is.

if you had two farms, you will give me one; if you had two houses, you will give me one; if you had two horses, you will give me one; if you had two cows, you will give me one; if you had two goats, you will give one." The orator quickly replied: "I have them." What he was willing to divide was something he did not possess. The same with some specialists who are always ready to give up that part of their profession in which there is no remuneration.

They forget that the dentist no longer limits his practice to the pulling of a tooth and the plugging of a cavity, and that dentistry has made sufficient contributions to medical and surgical knowledge to entitle it to the respect of all medical men.

More than one hundred and fifty years ago Laumonier first performed the operation of straphyloraphy, which was the beginning of surgical treatment of the great deformity of cleft palate, and ever since dentistry has formed itself as a profession; it has supplied the deficiencies of the hard and soft palate. It has most sucessfully treated fractures of the jaw where others have failed. The greatest boon to suffering humanity in the relief of pain by practical anesthesia was given to the world by Dr. Horace Wells, a dentist. The better element of the profession and the universities of high standing in this country, as Harvard, for example, entitles the graduates of the dental department as dental physicians. The German scholar as well terms the dental specialist as Zahnartz, the same as he terms the eye specialists Augenartz. In most states of Europe the certificates for the practice of dentistry is the same as for the practice of any other branch of medicine and the same boards that examine candidates for medicine examine them for dentistry. The board of registration in Maine registers their graduates of dentistry in the same manner as in any other branch of medicine.

In Missouri the legislature neutralized an adverse opinion given by one of the judges of that state, by passing a special act declaring dentistry a specialty in medicine, and that is no more than right. The dentist studies anatomy, physiology, pathology, chemistry, materia medica and practical therapeutics pertaining to his specialty, as well as the ophthalmologist, otologist, laryngologist, dermatologist, and gynecologist. A quarter of a century ago the American Medical Association formed section No. 7, until the tile of Oral Surgery, and since then all the great medical bodies of the world entitle their dental section to its distinctive name of Stomatology. In fact, there is no branch of healing art that has made greater progress in the last fifty years than Stomatology. Our little organization, though small, contributes its share to the advancement of oral surgery and its collateral branches. Let us therefore review the work of the past year, of which there were nine meetings, one being withheld on account of the meeting of the State Society.

For the June meeting we took an automobile ride with our wives out to the Bismarck Garden. The secretary having ordered a sumptous repast, every one had a good social time and enjoyed the fine music.

We have contributed six valuable papers and president's address, of which five were published in The Dental Review, that speaks for our organization. In November the valuable address of my predecessor, Dr. Woolley, who particularly called attention to the various pathological conditions of micro-organism of necrosis, hyperemia, cause of degeneration, questions concerning pyorrhea, what to be done with the first permanent molar, to improve nomenclature and hygiene or prophylaxis, antiseptics and mouth washes, to the cleanliness of teeth, to methods of pulp extraction, to the wonder of X-ray in diagnosis.

The discussion on the president's address brought out some valuable advancement, elaborating on the revision mention by Dr. Woolley in his annual address in the April number of The Dental Review. A valuable paper by Dr. E. J. Perry was read in December, entitled "Roach's New Opaque Porcelain," followed by the discussion of our guests, Drs. W. H. Taggart, Geo. A. Bowman of St. Louis, Walter N. Murray of Minneapolis, Minn., J. N. Crouse, S. Knowles, D. M. Gallie, Rudolph Beck, John Chapman, Southport, Eng.; T. M. Hampton, Helena, Mont.; W. H. G. Logan, Hart J. Goslee, E. M. S. Fernandez, Mr. Leslie Perry, Dr. F. E. Roach, and members of the society. In the July number of The Dental Review is a very instructive paper on the use of X-ray in dentistry by Dr. Harry Lovell Lewis, read in January, with valuable discussion by Drs. Woolley, Brophy, Lewis, Reid, Macdowell, Cook, Perry, Fahrney, Case, Lourie, Davis, Johnson, and my humble self.

The October number of The Dental Review contained a worthy paper by Dr. L. S. Tenny, read in February, entitled "A Few Experiments with Gold," a laboratory work of the highest skill, which was intelligently discussed by Drs. Perry, Ames, Davis, Carpenter, Woolley, Johnson, Reid, Cook, and my humble self. In the current month of THE DENTAL REVIEW was published the paper by Dr. A. W. Harlan, read in March, entitled "Sterilization and Disinfection as Related to Water, Instruments and Soft Tissues, Including Putrescent Pulps." The discussion was by Drs. Brophy, Johnson, Reid, Tenney, Cook, Carpenter, Davis, Ames, Wassall, and myself.

We also had two valuable papers contributed, one by Dr. J. G. Reid on "Roach's Moldable Porcelain," and the other by Dr. Casey Wood, on "Relation or Reflex of Eye and Teeth Diseases," which shows that all specialists on the various organs of the human body are amalgamated with each other, and from the foregoing literature read before our organization and the publication there signifies that we are contributors to medical as well as to dental education, to comfort suffering humanity, and that the various specialities are inseparable. In conclusion, gentlemen, I thank you for the great honor which you have bestowed upon me as your presiding officer for the past year. You may feel assured that no one is more sensitive to his dignity than I. Trusting that we will live and prosper and continue our research for the world of man, I most respectfully submit the paper for your consideration.

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held December 18, 1906, with the president, Dr. Hart J. Goslee, in the chair.

Dr. J. A. Bullard read a paper entitled "Attention to Detail in Taking Impressions of the Mouth."

DISCUSSION.

DR. L. P. HASKELL:

I can take no exception the paper. It is admirable, and the author has given in detail all that seems necessary. In some respects I do not follow his methods exactly, yet I take no exception to them.

About sixty-two years ago I entered a dental office for the first time. In those days impressions were taken with ordinary beeswax universally, and, I may say, too, that in those days all artificial teeth were on plates. The dies oftentimes were made of tin. Of course, to make a tin die the counter-die is made first. Made in that way, the work was done extensively. But remember, there were no suction plates. Spiral springs were used very generally. Many of you gentlemen have seen them, but few of the younger men have ever seen them in use. I think my preceptor was the first dentist to make a suction plate in New England, and was the first to use plaster for impressions. The plaster was the ordinary plaster of commerce, such as is used at present for plastering buildings, as there was no plaster made especially for dentists; yet it was remarkable to see what success was had in fitting plates. The plate was fitted to every portion of the jaw as snugly as possible and the adhesion of the plate was all one could wish for. A few years later, there was introduced what was known as the Gilbert Air Chamber, and is used today. Some years later the Cleveland air-chamber came into vogue, where the central portion of the plate was cut out and a raised wax was formed in the opening, an impression taken and a plate swaged and soldered over it. I used the method for a few years, then abandoned it, as I did all air chambers excepting in partial sets, no matter what the shape or conditon of the jaw. From that day to this I have used nothing but plaster for impressions. Of course, I know there are many cases where a good impression can be taken with modeling compound, but I should have to select my case. When taking a plaster impression I can readily tell whether I have a good impression or not, using it for full or partial sets for the lower or the upper jaw, selecting a cup a little larger than the jaw, and carrying impression high over the cuspid eminence and over the tuberosities if they are prominent. I carry my impression over the cuspid eminence for the reason that it is possible, as a rule, to wear the plate higher and make the artificial gum fuller to restore the expression lost by the extraction of the cuspid teeth. That has been my universal rule for many years. If it is a high arch I place wax on the posterior margin of the plate. To hasten the setting of the plaster, as most of the plaster that is used does not set quick enough, add a pinch of salt, but do not add salt until the plaster is mixed. Place it in the mouth, raise the lip, and press the plaster up at the rear first, pressing it under the lip so as to secure a complete impression of the labial portion of the jaw, especially if there is a considerable undercut there.

In cases where there is nausea applications of cocaine to the palate has relieved it completely.

Prepare the model, use a Babbitt metal die and swage the plate. If the plaster impression is correct and a perfect model from that impression, using a Babbitt metal die, a plate swaged to that die will fit the plaster model. If the plaster model represents the jaw, as it ought to, the plate will fit the jaw.

I have worked along this line for forty years. Some are in the habit of casting a die into the impression. I do not approve of it for the reason I must have a plaster model to refer the plate to. If the die is cast into the impression I can not secure the plaster model which is needed.

In taking an impression of a partial upper case, I use the flat bottom impression cup, with straight sides, open at the heel, but placing wax there. I press the plaster away from the sides of the cup as the outsides of the teeth are not needed and the impression is more easily removed.

The greatest trouble is in taking impressions of the lower jaw. The lower jaw, as we all know, is the problem that the dentist has to contend with. The impression cups for the lower jaw are faulty. The lingual flanges are altogether too deep and should be cut away extensively. In removing the impression press it backwards. The fact that it breaks is its salvation.

In taking impressions of partial lower sets, I endeavor to get a cup that is deep enough to take in the length of the anterior teeth, and, where necessary, apply a little wax at the sides. Before placing it in the mouth, I draw away the plaster from the upper margin of the plate, because I do not want creamy plaster on the labial surfaces of the teeth. That makes it more easy to remove the impression, and in removing the impression I aim to press inward, and it comes up easier in that way. It is a rule with me that the worse the condition of the jaw, to secure an impression, the greater the need of plaster.

I do not think there is anything more I can add to this paper and to the subject under discussion. I simply want to congratulate Dr. Bullard on presenting so excellent a paper on this subject before the society.

Dr. J. H. Prothero:

I arrived too late this evening to hear much of the reading of the paper, and as the essayist failed to furnish me with a copy of it, I am placed in the embarrassing position of attempting to discuss an essay of which I know practically nothing.

As to that portion of the paper I heard, I will say that he has expounded principles that are well known and are excellent. There are one or two points I want to emphasize, however, with regard to taking lower impressions, and one of them is the necessity for securing an impression as deep down in the distal portion of the mouth on the lingual side as possible. Dr. W. M. Morrison many years ago recommended the method of extending the disto-lingual portion of lower dentures back just as far as it was possible for them to be extended without causing the patient any inconvenience. In many cases he was able to secure stability of lower dentures by this manner of extension, which could not have been accomplished in any other way.

The method mentioned by the essayist of securing a deep impression on the lingual side of lower cases is certainly one well worth observing and carrying out in practice. I do not know whether the essayist recommended a method or offered any suggestions in regard to the mixing of the plaster. I do not want to leave the idea with you that I am a crank on the subject of manipulating plaster. However, I want to tell you that there are more failures from too much stirring of plaster than there are from not stirring it enough. The least possible amount of stirring you can give it in the preparation for taking an impression, the better results will be secured, the plaster will be more dense, less expansion will occur, and the general results will be far more satisfactory. If you had seen as much movement due to stirring in the setting of plaster and paid as much attention to its physical properties as I have, I am sure you would feel that many of the failures that result are due to that cause, at least the majority. Of course the lack of attention to details in general will prove disastrous in any case, but aside from that the handling of the plaster is an important factor and one that can not and should not be overlooked.

Dr. Haskell mentioned the fact that he did not care to have an impression of the buccal or labial portions of the teeth in partial cases. In some cases that would be all right, but I can always construct a better denture in partial cases if I have full buccal and labial alignment for arranging the teeth that are to be replaced. A better idea of the general alignment and of the form of the teeth to be used will result from proper alignment of teeth on the model, which would not follow if the teeth adjoining the spaces were imperfect.

Let me mention a plan of impression taking I have followed with good results. I do not like to introduce methods that were not mentioned in the paper, for that is scarcely treating the essayist as he ought to be treated. However, if you will pardon me, I will confine myself to the subject as closely as possible. This method is suitable for taking impressions of those cases where there are no undercuts present, where the impression will draw readily without danger of distorting the modelling compound. Select a tray of proper form and take an impression with modeling compound, that softens at a low temperature and hardens rapidly. There are two or three compounds on the market which fulfill these requirements, and among them might be mentioned Stent's, the English compound manufactured by Ash & Sons; also a compound made by the Detroit Dental Manufacturing Company, and another one manufactured by another firm in Detroit. One or two other manufacturing companies supply compounds of this character. Care should be taken to secure an impression of all parts needed in the work to follow. The impression is removed from the mouth, chilled in water, all surfaces of the impression dried with napkin, and inverted over a small Bunsen, or alcohol flame, and the compound softened to the depth of one or two millimeters on those surfaces that have been impressed. This leaves the bulk of the impression hard, but the surface that has been impressed is softened. This is again introduced into the mouth, care being taken to place it in the correct position, and when pressure is placed upon it and it is allowed to cool you will find it will be much more difficult to remove the second time than the first. This process can be repeated a third time if necessary. The results I have obtained from this method are most excellent, better than those I have been able to secure with plaster, and I can get just as good results from handling plaster-of-Paris as any one in this room. I do not recommend the use of modeling compound in partial cases or where undercuts are present, but in those cases in which the tissues are not uniform throughout the mouth, where the border is flabby, compound is contraindicated. Few, if any, dentures constructed and fitted in the mouth are perfectly adapted. Nature is very kind to us in affording a soft and yielding base on which substitutes rest, and therefore they imbed themselves, so to speak, by atmospheric pressure into the tissues, and that adhesion which is so much desired is thus brought about largely by the assistance of nature. I do not think many of us would care to secure absolute adaptation in any case, because it would mean a pressure against the tissues equivalent to 60 pounds, or about 14 7/10 pounds per square inch, which would most certainly create inflammatory conditions of a serious character and render the wearing of such substitutes impracticable. Most dentures can be displaced by a pressure of from three to ten pounds.

DR. L. P. HASKELL:

A word or two more with regard to what I said in speaking of not requiring an impression of the buccal surface. I agree that what Dr. Prothero has said is all right if the teeth are arranged by the plaster model. I must see the teeth in the mouth, and do not depend on the model.

DR. WILLIAM H. TAGGART:

There was no allusion made in the paper or in the discussion so far of taking impressions without an impression cup in partial cases. The essayist and previous speakers say that we should use a suitable cup. Now, to get a suitable cup for taking a partial impression is about as difficult and hard to do as to make a plate. A suitable cup means a great deal. To take a cup and trim it out sounds easy, but try it. I have been trying it for many years and can not get the results in some of the partial cases that I can when I take an impression without an impression-cup.

In doing this the first thing is to have the patient rinse the mouth with milk of magnesia. This lubricates the teeth and makes it possible for the plaster to get a close adaptation to the teeth, without sticking to them. In taking impressions sometimes the plaster is mixed entirely too thick, and you do not get the fine, nice line you can with thin plaster. If the plaster is mixed so that it will not drop in chunks, but run off, you can keep on piling up until you have got sufficient surface, so that you will have as much bulk of plaster as you would in an impression-cup. But the trouble with an impression cup is that as it is pushed to its seat it almost invariably touches some place, some vulnerable point, and that cuts through the plaster, so that when you take the impression-cup away and draw the sections apart, the plaster in many places is so thin that you can not find the little piece that has broken away, and it leaves a hole that is nearly always at the wrong point. I feel that I can build up partial impressions very much better without an impression-cup than with it. An advantage is this: you can get more bulk of plaster around certain parts of these teeth, and after the plaster has become hard it will not readily move out of place; but still it is easily cut with spatula or a sharp lancet. I slit it along in three or four places, just where I want it to break. But by having sufficient depth, I can slit it half way through when it hardens, and with a broad spatula put it in the full length of the slit which I have made while the plaster is semi-plastic; then twist it out and spring it apart. The slit must be made a certain depth so that the thickness of plaster will enable you to closely adapt the pieces together again.

Another difficult problem that presents itself is to get an impression of both sides of the mouth in a partial case. By using soft plaster, you have plenty of time to build it around to the median line, one-half of it, and let that harden, and when it is in a semi-plastic condition you can cut it. I use at this stage of the work a cement spatula, because it is narrow and at the same time stiff. I cut grooves or depressions which will allow the new plaster that is to be added to adapt itself to that surface as a guide. I allow this to harden, and after taking it out of the mouth I put vaseline over it, and then commence on the other side of the mouth, and if it is soft plaster manipulate it and bring it around until it laps over one-half inch. If you have taken care in forming the first one, the second half will draw away readily.

Dr. Haskell:

How long a process is that?

Dr. Taggart:

It is not nearly as long as it has taken me to tell it.

Dr. Dittmar:

What do you do where there is considerable saliva?

Dr. Taggart:

Part of it is taken care of by Dr. Nyman's saliva ejector. He has a saliva ejector which is practically a tongue-holder as well as a saliva ejector. In lieu of that, I use a saliva ejector and mouth mirror, and it is surprising how nicely you can handle the plaster if you do it when it is soft. It took me a great many years to find out that I was mixing plaster too thick.

Another point I want to mention along this line is that when you are pouring your impression, give up the idea of jolting and jarring. I have been doing some experimenting in another line, and it has taught me something that I did not know before. You take plaster that is full of air bubbles and they are not harmful in themselves except as they coalesce. Just the minute you begin to give this jar, this little one joins the other, and the first thing you know you have a big bubble along the corner of a central incisor, when you want to put a central incisor next to it. It is the large bubble that does the harm. Air bubbles which distribute themselves all through the plaster are not harmful, so that I find the jarring impression is the cause of more bubbles in your cast than any other one feature.

Dr. George W. Haskins:

There are only one or two points that occur to me in connection with this subject. No mention has been made of the position of the patient's head in taking an upper impression. It is usually important to have the head as far forward as possible in plaster impressions.

With regard to the use of modeling compound, I had my egotism taken out of me when I first graduated by an old dentist in the city, who came to me for a full set of teeth. I spoke about the uncertainty of impressions in beeswax; he agreed with me and I took an impression in plaster, but the resultant denture was not a success. When he took one with beeswax the plate fitted beautifully. While there is a good deal in the material we use, success largely depends on the man who handles it. In the matter of modeling compound, it is a mistake to cool it too quickly. Modeling compound seems to have a certain amount of resiliency and elasticity when first put into the mouth and pressed to place. If it is allowed to remain soft it will expand and get into recesses, undercuts and fine lines in the mouth that it will not reach if it is cooled too quickly.

Dr. G. W. Dittmar:

I would like to ask Dr. Prothero to describe in detail his method of mixing plaster. That is an important thing. If I understood him correctly, he said it should not be stirred very much and I think it would be of interest to know exactly how to mix it.

Dr. J. H. Prothero:

I will no encroach upon the time of the society more than a moment or two. The best method I have found for mixing plaster is to place the proper amount of water in the bowl, and that will depend, of course, upon the amount of plaster to be used. Stir the plaster into the water, using enough to take up all the excess of water. You can introduce the spatula, passing it two or three times across the bowl, but do not stir it. Better results can be secured if you mix it without stirring at all. A mix made in this manner will expand only ten or fifteen points, whereas if it is mixed or stirred well it will expand fifty or seventy-five points, or possibly more. The stirring induces more rapid chemical action, which causes it to expand to a greater extent than if not stirred at all, and that is the secret of mixing plaster successfully. Sulphate of potassium added to the plaster will control such expansion naturally as might occur, and bring it down to the minimum point. I have seen it at times remain perfectly dead, that is, with no movement at all when sulphate of potassium is added. The presence of sulphate of potassium softens the plaster, and the density of the set plaster is impaired, and consequently should not be used for the preparation of models. It is all right to use it in impression-taking; but, as before stated, sulphate of potassium should not be used in plaster that is employed for models. In the presence of steam in the vulcanizer it softens and does not retain its integrity under the continued pressure of the rubber during vulcanization, or until the vulcanite has hardened.

Dr. Dittmar:

What per cent of sulphate of potassium do you use?

Dr. Prothero:

About .5 gram of sulphate of potassium to 40 C. C. of water. This amount of water will require about 55 grams of plaster to make a mix of proper consistency for impression purposes.

Dr. Bullard (closing the discussion):

There is not much for me to say in closing, except to apologize for not furnishing a copy of my paper to these gentlemen who have discussed it. I did not finish it until last night, and was not able to get a copy around to them; but as you have seen they did not need to study a paper on this subject, and I wish to thank you for the interest and kindly manner in which it has been handled.

I am almost glad Dr. Prothero did not hear all the paper, for then he would not have given us these important points on the mixing of plaster of Paris.

The mixing of plaster is certainly a very important part of the impression, and the different samples of plaster will set differently. If we have a new lot of plaster, we make a test of it to find out how it sets. You may have a sample set rapidly, so that by the time it is in the mouth it is too hard, and requires a great deal of pressure to force it into position. Plaster should flow easily to get a good and sharp impression.

It may be set slowly so you will use warmer water than you usually do, and more potassium sulphate or sodium chloride to hasten it.

In fitting the tray so as to take a partial impression I do not see a great deal of difficulty in it; and where the cheeks and lips are moulded into place, the plaster pushed in and excess forced out all the way around until the rim of the impression will be thin, there is not much bulk of plaster to break away. It is not difficult to remove it.

In regard to the length of the lower plate, carried down on the lingual side, as referred to by Dr. Haskell and Dr. Prothero, I prefer to carry it down on the lingual, with the heel of the plate as deep as it can be worn, especially getting into the undercut underneath the tuberosities. A plate could be carried down there if it can be worn, and may be cut out shallow anterior to that point, allowing for those glands which roll over the ridge when the tongue is thrust forward or drawn to one side.

Dr. F. B. Moorehead read a paper entitled "A Case of Multiple Neuritis of Dental Origin."

DISCUSSION.

Dr. Truman W. Brophy:

The presentation of this case is naturally of interest to us as dental practitioners, especially since it deals with general systemic disturbances of a most pronounced type.

To sum up the conclusions reached from the history of the case, I should say it was a case of general infection due to the presence of a specific germ within the cavity formed about the apex of the root of a tooth. So we may repeat the old adage that, "A stitch in time saves nine," etc. It is the history of a neglected tooth, with the sequela that has been related. The disease was established through the decomposition of the tooth pulp, which extended a considerable distance beyond the apex of the tooth, involving a considerable portion of the maxillary bone. Within this cavity, which was left to the destruction of the bone itself, the pus formed and became the center of bacteria which produced such great disturbances of the nervous system. The nervous system having been disturbed by the general toxins brought about this muscular inability or failure on part of the patient to make use of his muscles in the normal way. A neuritis may thus be established, which, in some instances, will baffle the efforts of the most skilled in its management, and yet, true to the well-known principles of treating disease, the doctor became acquainted with the condition and applied the remedy in its proper way by removing the cause, and when the cause of the disturbance was removed the patient gradually recovered his normal condition. No doubt many lives have been lost through an infection similar to this.

Not long since there was a gentleman who was most active in the work of bringing about a law which provides for the inspection of all articles of food supplied to the American people. With his enthusiasm naturally in the discussion of the subject and its importance to the people, the importance of pure food, I said to him, "Yes, that is very important. Some people probably become greatly depressed physically by reason of taking impure food; but where one person is physically disturbed by taking impure food; where one person is affected and general infection takes place by reason of impure food, a hundred are disturbed by auto-infection or infection within themselves by reason of diseases of the teeth and of those diseases immediately dependent upon the teeth and that are associated with them. And I believe that statement is strictly true, that the human family today is suffering more from infection, such as the essayist pointed out to us, by reason of diseases of the teeth than from any other cause, or, I may perhaps truthfully say, from all other causes. The impairment of general health of the people through this medium is appalling. When we realize that the whole human family is affected by diseases of the teeth which have directly to do with the real essence of the paper that has been presented tonight, we see what a great mission the dentist has to perform by reason of his skill, his judgment, his care, his teaching, because the dentist's greatest mission is to be a teacher of the people.

I hope the question of infection through the medium of the teeth and of the oral cavity will become better understood, and as the work by general practitioners of medicine increases and becomes more useful to their patients, they must necessarily understand the matter of oral hygiene and of prevention of oral diseases.

Dr. T. L. Gilmer:

The clinical picture in this case has been well drawn, and we are much indebted to Dr. Moorehead for the exact methods he has employed in producing it.

Dr. Moorehead will agree with me, I believe, that this must have been an exceptional case; in other words, that there are many similar cases of suppuration which do not result in a similar train of symptoms. In an experience of over thirty years, twenty-five of which have been intimately associated with hospital and infirmary surgical practice, I have never seen a case of multiple neuritis as a result of suppuration of the jaws. Had Dr. Moorehead not demonstrated the diplococcus, isolated and cultivated it, afterward inoculating animals with the culture and getting duplicate symptoms in the animals, I should have been of the opinion, with his other negative findings, that the neuritis, if it was a neuritis, was due to some extrinsic cause, which the patient had overlooked, such as poison from arsenic, carbon disulphide, fumes of alcohol, lead, mercury or coal-gas. All of these have been known to produce multiple neuritis. I do not remember to have heard of a case of multiple neuritis which recovered in so short a time. Usually several months are necessary for recovery except in those rare cases in which a pseudo-multiple neuritis comes on and goes off with a paroxysm of malaria. It would have been especially interesting had the doctor told us more of the nature of the organism he isolated. Was it similar to any of the well known varieties of diplococci, such as the pneumococcus? He spoke of the pus being fetid. Was the odor peculiar to that produced by the diplococcus fluorescence foetidus, which is found in the posterior nares, or was it due to some other organism?

These are questions which naturally arise in the mind in studying this case. I find it difficult not to be a trifle skeptical as to the diagnosis or the cause, or both. The reason I am skeptical is, first, that it does not fit any experience I have had or heard of as to such an abscess causing such a condition; second, I have never known of so serious a case as this practically fully recovering in four weeks from the onset of the disease, except as has been before mentioned. But the facts remain, there were clinical indications in the patient of a multiple neuritis, a diplococcus was isolated, it was injected into a rabbit and a guinea pig with similar symptoms appearing as found in the man. If no errors were made in the isolation and cultivation of the micro-organisms, and the pathology in the animals was identical, then we must attribute the condition to the diplococcus, but need not of necessity believe that the suppuration was a factor in producing in this case, only so far as it lowered the vitality of the patient, and made him the more susceptible to the toxine of the diplococcus. We can easily suppose that the diplococcus was simply an accidental accompaniment in the pus, that it found here a habitat suited to its growth and multiplication, and that its poisons were distributed to the system from this territory, producing not a true neuritis, perhaps, but a toxemia resulting in a partial paralysis.

The microscopic findings did not indicate serious degeneration of any part of the nerves, which also makes me suspicious that it may not have been a true neuritis. Had the man a greater degree of degeneration, on account of having longer been subjected to the poison, then there would have been a slower recovery than indicated by the report. The leucocytosis, and the sub- and hyper-normal temperatures can be accounted for by poisons absorbed from the suppurating area.

A great amount of special knowledge and fine and exact work is necessary to carry out an investigation of this kind, as there are so many ways for errors to creep in which would lead to wrong conclusions; but I would not discourage the doctor in his research, but praise him for his efforts as there is much need of similar work along these lines, and the young man who undertakes it is to be applauded.

Dr. Otto Holinger:

This paper of Dr. Moorehead seems to me to be a very timely one. It demonstrates the important relation of the field or domain of dentistry to the rest of the economy and also shows the physician and the public that the dental specialist, meaning "he who cares for the mouth and its contents," should be and is also a worshiper at the altar of medical science.

In this case we are confronted with a condition which is just being studied more or less universally, but cases of which are and have always been more or less numerous.

We find here that the poisonous substances, "bacteria, toxines, decomposed food, etc.," have been manufactured in the mouth and from these an intoxication of the rest of the body has taken place.

The intoxication of the body, as you are aware, is produced in several ways, but in the mouth we will confine ourselves to the natural means of absorption.

It has therefore been shown that substances are absorbed by portions of the tongue pillars of the pharynx and tonsils especially. The cheeks, etc., of the mouth have the absorption power also, but to a small degree.

When substances are absorbed by the three main organs in the region under consideration ,viz., tongue, fauces and tonsils, we find the vascular system is quickly burdened with these substances and when in sufficient quantity produce their main influences on the cells of the body and the walls of the blood vessels and heart. This condition is first called septicemia; when abscesses are formed it is known as pyemia.

It is through this avenue of infection we get the genuine multiple neuritis, which means an inflammation of the peripheral nerve itself.

Then the second way of absorption is in the stomach and intestines. That is to say that those bacteria, toxines, etc., found in the mouth and are not absorbed in the first mentioned manner are carried down into the stomach. Here under ordinary conditions the bacteria are killed and the toxines and other by-products usually harmful to the general economy are absorbed in the usual way the products of digestion are and of which you are all familiar.

It is an interesting phenomena noted, then, that those products absorbed through the alimentary tract usually exerted a direct influence on the nervous system both cerebral and spinal, and only the cellular portions thereof, meaning the muscles and cells in contradistinction to the neuraxis are affected.

In this case as all the organs, heart, etc., were normal, I question the diagnosis of multiple neuritis, but think rather it was due to the irritation of the various nuclei in the spinal cord, medula and brain proper. The protracted recovery of the patient I believe was due to the slow removal of the cause.

Treatment: Remove the cause, prevent the noxous substances entering general economy by irrigating mouth very frequently. Keep bowels very active by salts and calomel due to the latter's influence on the liver, kidneys, etc., dilute the toxines and promote diuresis with copious draughts of water and stimulate the cells, make some toxins more soluble and aiding combustion by giving large doses of alcohol (straight whiskey best), reducing the doses as patient recovers.

Keep patient's natural combative and protective agents in good condition by plenty of wholesome, easily digested food.

Dr. Otto Plutschow.

When I heard the clinical report of Dr. Moorehead's case, I was almost convinced that this was a case of uric acid diathesis due to uric acid stagnation, yet, as I understand, the finding of the phosphates was not so pronounced. The pathological side of this case has been thoroughly investigated, yet I would like to go further into it.

This case brings us more and more to the question of whether dentists in general should pay more attention to the physical and physiological conditions of their patients, and their mode of living, as these may be a conspicuous factor in the etiology of the diseases of the oral cavity.

The question of nervous irritability in this case has been specially mentioned. As the policemen of the body are the leucocytes, or are so regarded, they are called into action in response to any irritation, so that we have both leucocytosis and osmosis taking place, carrying away the toxins of bacteria or any other material due to a pathological origin, and as leucocytosis was clearly noted in this case, it is reasonable to conclude that Dr. Moorehead had to deal with a case of auto-infection which showed the symptoms of multiple neuritis. I agree with Dr. Moorehead that it is very essential in the treatment of this case to administer cathartics, as calomel, etc., diuretics, lithium benzoate, citrate, etc., to help the system to remove or carry away the toxins or pathological materials that have accumulated. In this case, if I understood Dr. Moorehead correctly, muscular weakness and twitching were present. This shows that by deposits on the neurilemma, or the sheath which surrounds the axis cylinder, the nerves had been influenced; that there has been produced some irritation on the nervous system. I never heard of such an interesting case before, and as there is no doubt as to the etiology, especially where Koch's circle had been produced, viz., the production of a pure culture, the inoculation into a rabbit, with the occurrence of the same symptoms, the post-morten findings showing the presence of the bacillus, I believe proves that the existing agents were due mainly to the absorption of the toxins of the micrococus intracellularis meningitidis.

I would like to say that if the practitioners of the dental profession will pay particular attention to this case or similar cases with similar symptoms, which are very likely to come under their care, they will accomplish a great deal more in benefiting their patients either by being able to cure them or to regulate the hygiene of the oral cavity. Unquestionably, according to recent investigations, in a large percentage of cases we have to deal with similar symptoms that are mainly due to uric acid stagnation and these are often manifested in pathological findings in the mouth. We should pay more attention tq these conditions, as uric acid stagnation can be demonstrated as an etiological factor in diseases of the oral cavity.

Dr. George W. Cook:

This report shows that we should devote more attention to this and similar cases that come under our observation, because in many instances we will help the physician very materially in coming to a proper conclusion in regard to the cause of the trouble.

In the report of this case I should infer that it fell into the hands of a physician before it did a dentist. The case illustrates the advantages of the physician calling in a dentist on whom he can rely to help him in making a diagnosis and giving a reason for the condition.

The bacteriological findings in the case reported are not strange, because, I think, we would have similar findings in animals in which multiple neuritis develops if we were to follow them out closely and carefully. The pneumococcus, as ordinarily found in connection with cerebral fluids, has a peculiar effect. A few years ago I had occasion to make a bacteriological examination of a case that died in twenty-four hours from meningeal infection. I found pneumococci, but they were not plentiful. There was considerable degeneration of the spinal cord found post-mortem by examining microscopic sections. All of the symptoms that have been mentioned were present in that case. The patient died before the real cause was ascertained, and perhaps if the cause had been found the result or final outcome would not have been different. The case I saw shows conclusively that a patient may have multiple neuritis and all the manifestations of the disease in a short space of time.

Regarding the toxins and their effects upon certain nerve centers, it seems from a study of bacterial toxins that they have a special and peculiar effect on certain nerve centers like certain drugs, as strychnia, and various other alkaloids. Some one has said that they have a special affinity for a particular nerve center or nerve centers and act upon them independently, while the other nervous symptoms are entirely absent.

Finally, I want to say that this is one of the best reports of a single case I have ever heard, and one that shows us the importance of studying more closely the cases that come under our observation.

Dr. Moorehead (closing the discussion):

I think the case I have reported tonight is one of meningococcus infection. The case came into the hands of a physician originally and through his courtesy it was turned over to me. The diagnosis of multiple neuritis was confirmed by one of the most skillful physicians in this country. The history was taken by an interne under our direction. The time of recovery was not four weeks. The paper did not state that; but according to the heading "subsequent history," the patient is now entirely well. The date of the inception was the 24th of June. It is now December 15th. The patient began to convalesce from the time the operation was done and is now considered well.

Dr. Gilmer:

I thought the patient walked home at the end of four weeks.

Dr. Moorehead:

He did, but he was by no means entirely well then. His recovery has been slow, and has extended over nearly five months. I believe that is true of all cases of polyneuritis.

With reference to the use of internal medication, calomel was the cathertic used, followed by salines. There was no doubt about the diagnosis in my mind. It was an extreme case of multiple neuritis, and the condition, in my judgment, was not produced by pus, but by toxins. The quantity of pus, the character of pus, had nothing to do with the man's condition. It was from the absorption of the toxins found in the pus which had to do with his condition. Experiments are being conducted on a more elaborate scale, and I shall be glad at a later date to give the final outcome. I am indebted to those who discussed my paper, and I wish to thank the members for their patience.

A regular meeting was held January 18, 1907, with the President, Dr. Hart J. Goslee, in the chair.

Dr. M. L. Ward of Detroit, Mich., read a paper (by invitation) entitled, "Some Reasons for Instituting a Public Means of Protecting the Profession Against the Use of Poor Alloys."

DISCUSSION.

Dr. G. V. Black:

Mr. President and Gentlemen: I am very glad to say a few words as to the principal points in Dr. Ward's paper. There are certain things that I wish to say on this subject which I cannot very well formulate and say this evening. I have in the past had a good deal to say regarding amalgam and its use. Some of those things Dr. Ward has said again this evening, and with the mention of one or two points in the latter part of his paper, I will leave the bulk of it and address myself to the title of his paper.

He has brought strongly to your attention again the fact that we do not as dentists manipulate our amalgam so as to get the best use of it. If we did so manipulate it, we would get a much better filling. Amalgam can never be as good a filling as gold for the reason that it is more difficult to learn to manipulate than gold. It takes more time, more care, more experience to do it, and dentists take less pains with it than with gold. This is the one difficulty, but given a manipulation that can be given to amalgam with the alloys that can be produced today, it is a very close second to gold. I can find amalgam fillings that have been in ten years with just as good borders as any gold fillings that have been in the same length of time; and the tooth material is just as white as when the amalgam was placed there. The idea that amalgam must turn a tooth black is all wrong. So long as we will undertake the use of amalgam without properly amalgamating it, we will necessarily have poor amalgam fillings. So long as we undertake to use amalgam that is over-annealed, in order to make it work soft and plastic, we will have poor amalgam fillings necessarily. It is impossible for any man to make good fillings of such an amalgam, even though it does not shrink or expand after being placed in the cavity. These things I have spoken of over and over again, and have tried to teach them; but it is very hard to impress these things on a profession that has become utterly careless as to the use of this material. I wish to say another thing. In my illustrative experiments before my classes I have generally each year taken a single alloy and made several series of fillings in matrices for the purpose of showing the variation in the crushing stress from the same alloy, with the same percentage of mercury used. I have made fillings that would break at thirty pounds, fillings that would break at one hundred pounds, or at one hundred and fifty pounds, and other fillings that would stand four hundred and fifty pounds, all with the same alloy, with the same percentage of mercury, but not with the same manipulation.

DR. DITTMAR:

Will you explain a little more the manipulation?

DR. BLACK:

To make a strong filling and one that will have close margins, get first the right proportion of mercury. Mix and work the material until the mass is perfectly smooth and plastic. Then it should take the finest skin markings of the fingers. Continue the kneading until the first slight evidence of stiffening becomes apparent and then make the filling quickly. It should stiffen at once on being pressed into the cavity so that it will not draw back from the walls when the instrument is withdrawn, or move again when more material is pressed upon it. Do not mix it a little in the mortar and then roll it a moment in the hand and place it in the cavity half or less than half amalgamated, because you will never have it in condition to make a good filling when mixed in that way. The filling will not shrink nor expand if the alloy is right. But it is not in any condition to make a filling that will ever become strong or good, and until we amend the mixing we will not have alloy fillings that are good. The working of an alloy, in getting the conditions and making good fillings, seems to be more difficult to learn than the making of a gold filling, but when it is once learned it is not so very difficult to do. But we must learn the manipulation just as we have to learn the manipulation of gold, and just as long as the body of the profession is careless about it we will have poor amalgam fillings.

As to the other phase of the paper, we have had time to know that we may have alloys that will not shrink and will not expand. I have been testing alloys for many years. I have fillings under observation that have been in since 1895. They are still under observation. I have measured them under various conditions. There are certain of these alloys which I thought were perfectly good at the time they were made that have moved, apparently, with every change of temperature. If there is only one per cent of zinc, if there is only one-half per cent of zinc, we can notice it in two or three years. It is the disturbing element. But I did not intend to refer to that phase of the subject.

The manufacturers make that which dentists inquire for, that which dentists want to buy, and that which they can sell. That is their business. It is our business to see to it that we obtain that which is good for our patients. There is no difference in the interests whatever. When we determine just what we want, the manufacturers will give it to us. There are plenty of manufacturers who can make an alloy that will do exactly a certain thing, if we desire it. If I were to write to a certain house and ask them to make me an alloy with four per cent. of copper and no zinc, they will produce an alloy that will neither shrink nor expand. If I should ask them to produce an alloy of pure silver and pure tin, they will do that. If I should ask them to produce an alloy of commercial silver and commercial tin that will neither shrink nor expand, they will do that. I need not tell them what proportions of these metals to use. This thing can be done with great exactness commercially; but if the profession does not care anything about it what is the use for the manufacturers to bother themselves about having this right.

There is one proposition I wish to speak of and it is this: The profession, for the purpose of protecting itself, should appoint several persons who are thoroughly capable in this matter, so that they can check up against each other, and who are not interested in any manufactory, who will publicly test alloys that are on the market and tell the dental profession what comes up to the standard and what does not. The practitioner can not determine this for himself and it is time that it was being determined for him. The question is, Does the profession want a good alloy or not? One man may want an alloy that works very soft, without inquiry as to other desirable properties. Well, I would condemn such soft-working alloy at once, for no man can make of such a filling that is secure. I can not. It is out of the question. These points must be studied and determined upon, and it is within our power to do it. These tests having been made, the manufacturers will come to any test we can give them. Those men who know how to manipulate an alloy in its manufacture will be satisfied with any reasonable test, and I apprehend that no one will make it unreasonable. In this way we can have alloys that are workable into fillings that will be a very close second to gold. But the profession has work to do along this line. It is not all done. You can not press a button, manufacture an alloy at random, put it in a tooth and secure a good filling. The profession must arrive at the point of considering an alloy filling as a good filling, and at the point of acquiring a manipulation that will make it a good filling, otherwise it is of little use.

The question is simply this, Do the members of the profession want this? Will the profession put it in shape, so that we can control this matter of making alloys, or will we have to wait another series of years before this can be done? Although I have not said much about alloys for a number of years, ten or twelve years ago I had a good deal to say about them, but since I have not, and I do not propose hammering on this thing year after year. I am going to have another word about alloys before long; as soon as I can get time to do some writing, but it will take some little time yet before I can do it.

I want to say a word about the association and disassociation of mercury in alloys. I think some of Dr. Ward's tests are entirely beyond reason. Mercury associates with or combines with tin and silver at ordinary temperatures. Before we reach the boiling point much of it is dissassociated. Very much of it will begin to separate from the alloy at the boiling point, and as we approach that point we do have a movement that we will never get in a simple dash of heat of 130° to 140° as we get it in the mouth. But if we hold it continuously at a high temperature we will get a movement, particularly if we have zinc in the alloy. For goodness sake, why do you wish to hang on to that zinc? Any maker of alloy can with four or five per cent of copper get a harder and whiter alloy without zinc than with it. Of course, you require more mercury and mercury is the whitest of the metals used. It will stand whiter in the mouth. So much for that point.

I wish to urge the profession to look to the usefulness of these things to their patients. You have a duty to perform to the community. They depend upon you, and the fact that you have a duty to do ought to bring you to study all of these questions with the utmost care in order that you may do your duty to them. This is my interest in the subject. Here is a material that is capable of an immense benefit to humanity in positions where we can not so well use gold, and it is our duty to study it for the benefit of mankind. We are professional men and it is our business to guard the interests of our communities.

Dr. Fred B. Noyes:

It is almost impossible for me to say anything in the discussion of this paper, especially after the remarks that have just been made by Dr. Black. I read the paper last evening, and this evening have listened to it with very great interest. There are certain things brought up in the paper which one might enter into some discussion of, but which are not in the spirit of the paper. They are side-tracks; they are leading out of the subject rather than into it, as presented. And, further than that, they are questions which are fruitless of discussion at this time. There is no use to talk about things we do not know about. There is no use to present ideas of things that may be so or may not be so, unless we have some reasons for our belief in them. There are a number of things which invite talk in this paper, but I am not going to talk about them, because I do not know anything about them. We may think about them, but as to actual knowledge of the subject I do not know. There are a number of things in his paper that call for further work. But the title of the paper is the thing we are most interested in.

We need to know more about our dental alloys, and we need to have more interest in them. We are too careless about alloy fillings. We let the public set our pace. We have not taken the public in hand to educate them as to the possibilities of alloy fillings. I sometimes feel as if the profession has been asleep since 1895 on the alloy proposition. We know how much better our alloy fillings have been since 1895. Take the whole profession over and we can find men who make good alloy fillings; who have some patients with good alloy fillings in their mouths; but how many of the profession have awakened to the possibilities of the alloy proposition? Very few, I should say. The members of the profession are still letting the public tell them what to do. People come to them and they expect them to put in amalgam fillings in five minutes and to charge very little for them. And they do it. They have not awakened to their duty to the public. They have not taken the public and educated them as to their own interests. What would have happened to the public if the medical profession had taken the same attitude toward vaccination, toward all other lines of advancement in medicine? It was only through the efforts of the profession that the public has been forced to realize that these things were to their advantage, and they have been forced upon them against some opposition. We have got to contend with the same proposition if we wish to do our duty to the public in the matter of alloy fillings. There is a vast number of people who cannot properly afford gold fillings, and they have just as much right to get the best service out of an alloy filling that can be given them as anybody else, and it is just as much our duty to see that they get what they ought to have. It is not enough for us to say we give them what they want or ask for. That does not comply with our duty in connection with this proposition. It is our duty to educate them, to impart knowledge of what they want, and make them see, know and realize that alloy fillings are worth three or four times more than they wish to pay for them; that they are that much better worth the money, where skill is employed in putting in such fillings carefully. It is a better business proposition to them. They are better off with them than they would have been with the other thing. When we wake up to that fact; when we come to our senses on the amalgam and alloy question; when we master the technic necessary for its use, so that we can make good amalgam fillings; when we get that confidence in ourselves that we know what we can do, we can make the public realize what we can do for them with it. When we get a large enough proportion of the profession to wake up to that proposition we can have from the dealer an amalgam or alloy that will enable us to render that kind of service, and that we can depend upon.

I believe with the spirit of the essayist that in order to bring about that condition we need to have some public statement, some authorized and authentic knowledge as to the properties of the alloys that are on the market, so that we can know not only whether they will shrink or expand; whether they are strong or weak; whether they will flow or not flow, but also what their working qualities are; whether they have the qualities which will enable us to make good fillings, or the qualities which make it impossible to make good fillings with them, and whether they shrink or not.

I hope that such a paper as this will create renewed interest in this topic, so that it will assume definite form, and that later we will have a public means of knowing more about the quality of the materials that are furnished to us.

Dr. J. P. Buckley:

It has been a long time since I have listened to the reading of a paper with as much interest as I have this one this evening, because Dr. Ward has been fighting along the line of the amalgam question the same as I have somewhat along the line of dental medicines. Few of us realize the amount of time, the energy and money, if you please, that Dr. Ward has spent in coming to these results, in bringing these conclusions to us, and he has had only one object in view, namely, to benefit the profession, and that is the part of the paper that I admire.

Dr. Noyes said he did not know anything about this subject, and was not going to discuss it. I used to think that I knew something about amalgam, but I have found out tonight that I do not, and I am not going to take up the time of the society in killing time, for that is all I could do were I to attempt to discuss this paper. Besides, there are others who can discuss this subject much more intelligently than I can.

I want to thank Dr. Ward for the manner in which he has presented the subject to us. I have only words of commendation for him.

Dr. J. N. Crouse:

I have listened to the paper with a great deal of interest. Some parts of it were entirely new to me, and I have no doubt that some of the statements made by the essayist are correct, although I would want to prove them.

Dr. Black in his remarks made a comparison between the filling of teeth with amalgam and gold, but he did not say that the best operator cannot be quite as sure of making as good an amalgam filling as he can with a gold filling. I can make a good gold filling about as quickly as I can make a good amalgam filling, and therefore I know when I have made a good gold filling, because I can finish it. If I have defective margins I can finish them. But I cannot say so much so far as amalgam fillings are concerned.

If I were to attempt to put an amalgam on the market which I considered the best for use there is not one dentist in a thousand or two in a thousand who would use it, because it does not manipulate easily enough for them. Why do you put zinc in? Because it manipulates easier. It is more plastic. Dentists cry for something that is more plastic. I agree with what has been said, that it is not the best kind of amalgam to fill teeth with.

As to the proposition to educate the dental profession to use a good material, I doubt very much whether it can be successfully done. I have been trying to educate the dental profession for a long time. But I have quit. I have spent so much time in trying to get the dental profession educated up to a certain standard that I have been discouraged.

There are difficult cavities in the mouth where we cannot be sure that we make good amalgam fillings. I refer to buccal cavities in molars and bicuspids. We cannot put a matrix on and hold it there. If you press it to one side it kinks out on the other. Where you have a large cavity, fasten your matrix on, get it well fitted, pack the mass of material in with small pluggers at first, and then follow with larger pluggers; you can be sure of what you are doing. I am not an enthusiast on amalgam fillings. In an ordinary case I can insert a gold filling as quickly as I can make an amalgam filling, and then I know what I have.

Dr. L. H. Arnold:

I would like to ask the essayist whether the proportion of mercury in the alloy has any peculiar effect in the final result?

It is my impression that we mix our amalgams by taking what we consider to be the right amount of mercury and put it in, and I am not surprised that we do not get uniform results.

Dr. Howard N. Lancaster:

If a mass of amalgam has been prepared for a filling, and through some reason or other after the setting process has already begun, and before any part of it is introduced into the tooth, will the essayist describe the effect that would occur if a slightly additional quantity of mercury is added to that mass?

Dr. P. J. Kester:

I did not expect to be called on to participate in this discussion, and I do not know that there is anything I can say on this amalgam question that has not already been said. I have had considerable experience with amalgam, and it has been valuable to me in many ways.

The title of the paper is very suggestive. One of the great obstacles in the way of the use of a high grade alloy lies along the lines that have been suggested, and that is, all high grade alloys are difficult of manipulation. The reason they are not more generally used is because it requires more time, more skill to insert them. As Dr. Black has suggested, it requires more patience, more skill, to put in a good amalgam filling than it does to put in a good gold filling. I have learned many things with reference to amalgam in working with Dr. Black. I have learned one thing in particular, and that is, I have been absolutely unable to perfect an amalgam filling under the most favorable conditions, namely, with a steel tube made mechanically correct and with the conditions favorable for doing the work, it was impossible for me to make an absolutely perfect amalgam plug. So we must not expect to undertake to manipulate amalgam in the mouth if we cannot do it successfully outside of the mouth.

I am not talking as an amalgam manufacturer, but as a dentist, and I believe one great trouble is that it is too hard work; it requires too much time to put in amalgam fillings as they ought to be inserted, and I do not like to say that it is a question of money with us. Early in my professional life I think I made the statement that I never bought, except for experimental purposes, an ounce of amalgam in my life; but I recall now a man who came to my office and offered me some amalgam, as it was called then, at fifty cents an ounce. I thought it was *cheaper* than I could buy it elsewhere or make it. I bought considerable of it. It was absolutely worthless. One great trouble is we want something which will give us the least trouble for the least money. For the intelligent dentist who reads there has been sufficient information given out so that he can have a fairly good guide as to what he really needs. Therefore I believe it is very largely the fault or the dentist himself for the so-called poor alloys that have been used.

The essayist says that copper amalgam fillings are lost by wearing away the oxides and sulphides that form on the surface of the filling. This is partly true, but the greatest factor in the loss lies in the fact that these oxides and sulphides are soluble in three things, acids, alkalines and grease, all of which are found in the mouth. The proof lies in the fact that the greatest loss in copper amalgam filling is in cavities between the teeth near the gum margin, where there is no chance to wear out.

I have been very much pleased with the paper of Dr. Ward, and I would like to mention one thing to illustrate the conditions that govern the manipulation of amalgam. I made one line of experiments in regard to the changes which take place in working amalgam in the presence of saliva. I filled a matrix to test for stress, and I allowed the saliva to pass over the matrix, and filled it with amalgam. Under normal conditions there was a resistance of 450 pounds. Making *this* filling in the presence of saliva and putting it in the machine, I found that the general average of resistance was 175 pounds, showing that in the manipulation it was absolutely necessary in this work to keep it dry. That is a mere incident in the manipulation of amalgam. This material is one of the most uncertain, one of the most treacherous the dentist can use, but thoroughly mastered, it may become a useful and desirable part of his outfit.

Dr. McGinnis:

Are we to understand from the paper that has been read, and from the discussion by Dr. Black, that there are no ideal amalgams on the market today?

Dr. G. V. Black:

In answer to that question I will say that I have recently made several tests of amalgams, and I find that we have constantly on the market amalgams that are perfectly reliable, in which the shrinkage will be *nil*. The expansion, however, will sometimes be a little too much, but I have had no trouble in finding an alloy that will not expand more than one point, which we consider perfectly safe. In the last few days I have made tests of an alloy that gives less than one point expansion, with absolutely no shrinkage.

Dr. Crouse:

What about the question of annealing?

Dr. Black:

You may anneal a properly made alloy to a point where there is no expansion or contraction. You may continue that annealing further and make a sloppy (?) stuff of it and yet not make it shrink. We are capable of producing all grades of stuff of most any of the alloys that do not shrink or expand. If you push it against the wall and raise your instrument it will draw away from the wall, and that will fill up with mercury. If you get mercury flowing over the top, you will have mercury between the wall of the cavity and the portion of the filling that is packed. No man can make a filling with such stuff.

Dr. Crouse:

What proportion of the dental profession do you think weighs the proportions of mercury and amalgam?

Dr. Black:

Very few. It might just as well be put up for them in capsules of the proper weight. I wish it could be done.

Dr. Fernandez:

I would like to ask why it is that Dr. Crouse advocates the use of so much mercury, and then squeezes it out.

Dr. Black:

We are dealing with Dr. Crouse tonight as a dentist, and not as a manufacturer. He is not supposed to be here as a manufacturer.

Reverting to Dr. Callahan's paper, which was referred to by the essayist this evening, there are some things I had to say that night that did not get into print. While we often have amalgam fillings with fifteen or twenty per cent of air spaces in them, it is not at all necessary that we have these air spaces. If we properly mix and work the air out of the amalgam we need not have any, or a good deal less than we have in gold fillings. We need not have mercury between the filling proper and the wall of the cavity. Mercury will not go to the wall of a cavity in preference to other parts of it unless you have the mass moving while you are making your filling. It will not move if the consistence of your alloy and the setting properties are such that when you put the instrument on the mass that has been packed it stays where it is put. If any of you will take pains to manipulate the alloy under the microscope you will see that a soft working alloy is moving continually. If you work the air out of the amalgam while mixing it you will have none of it in the filling. You can make it solid, you can cut it as you please, and you will not often find an air space in the whole filling, but that requires careful manipulation.

Any gentleman here can put in an amalgam filling if he will take the time to acquire the necessary manipulation.

Let me say once more that it is the mental attitude of the profession toward amalgam as cheap stuff that prevents proper manipulation, but it is not cheap stuff if it is properly handled.

Dr. E. M. S. Fernandez:

The question I asked was not personal; neither was it directed against any manufacturer. It was, I think, according to the text of the paper.

I wish to ask the question again. Why is it that some manufacturers advocate an over-amount of mercury in the mixture with the alloy, and then squeeze the excess out? I have seen this in print repeatedly with the materials they send out to the dental profession. I believe it is proper to ask such a question.

Dr. J. P. Buckley:

The question has been asked whether or not we have any ideal dental amalgam alloys on the market. Dr. Black says we have, and I am anxious to use them. Now, if I were conducting a series of experiments along this line in the interest of the dental profession, unbiased by any manufacturers, and found out that John Jones' dental amalgam alloy was an ideal one, I would tell my friends, and I would tell it in a paper. (Applause.) If there are ideal dental alloys on the market, I want to know where I can buy them. I will use them, and pay three or four dollars for them instead of one or two dollars, or one dollar and fifty cents. (Applause.)

Dr. Black:

Dr. Ward has given a list of high grade alloys that are reliable in his paper.

Dr. McGuiness:

All we got from Dr. Ward's paper contained zinc, and we were told that they should not be used.

Dr. M. L. Ward (closing the discussion):

I am sorry indeed that the real title of my paper was misunderstood by Dr. Black. I am sorry he did not discuss each phase of it, as we expected he would. I am sure it would have been much better for the profession if he had discussed in detail every phase of this paper. If he had, and if I could get the next one or two that I shall write discussed as I would like, I am sure many of you would profit by it.

I do not need to tell any of you that something is wrong with this stuff. You have all been disappointed. When you insert an amalgam filling and finish it down to the borders, it looks all right, but when it is presented to you four or five years later it has had something happen to its borders. What is it? Did he tell you? No. He declined to discuss that phase of the paper. Why?

I'll tell you, gentlemen, that the time has passed when the secrets of the inner sanctum shall be known to a selected few only. There must be general information if we progress.

Dr. Black admits that there is a movement when a filling is subjected to high temperatures, but is not willing to admit that 130° or 140° will accomplish the same thing in a longer time. What is to prevent it? Did he tell you? No. There are two things I want to call your attention to again, viz., that mercury is removed from almost all its alloys by heat and many of them by pressure. No one has any right to say that mercury is not disturbed by temperatures of 130° or 140° until he has put up two thermostats, one of which shows room temperature and one possible mouth temperature (130°-140°) and goes to work.

We are all liable to mistakes, hence it is possible that I may have made some, but if any one chooses to write me up on this subject I will reply as fast as a pen can do it, and I'll promise you that the profession will get something out of it. You *must* amalgamate your alloys more thoroughly or these temperatures (130°-140°) will do it for you, and the result will be enormously expanded fillings with alloys which expand at all and contain excesses of mercury.

Dr. Ames and Dr. Greer tell us that we must spatulate our cements thoroughly. Mr. Garhart has pounded away for years on the thorough grinding of alloys. These men have reasons for this, and if you suggest some of the things to them that I have mentioned here tonight they will not scowl at it. They will admit that it looks probable.

There is no one living man that I admire more (you all admire him) than Dr. Black, though I shall continue to take the stand I have taken regarding the action of heat on our alloys till some one goes to work and disproves it. Dr. Noyes says that I need more laboratory work and we all need to wake up. I have this to say, that I have as fine a laboratory as there is in this country, and that I have done the work and am willing to meet him on any phase of this work. I only ask him to say something about the subject when he talks.

The question has been asked, "What effect does improper proportions of mercury have on our fillings?"

We have heard a great deal about the use of proper proportions of alloy and mercury, and yet there seems to have been no definite understanding arrived at yet.

First, let me state that the proper proportion of mercury to use with a given alloy is the amount that we should use to amalgamate it, and is not the amount to be left in the filling.

If the maker of a given alloy advertises that the mercury is to the alloy as 7 to 5 he means that you should use 7 parts of mercury and 5 parts of alloy to make a plastic mass, and after the mass has become smooth and fine grained by thorough working, you should remove all the mercury you can conveniently with ordinary pressure. The difference between the mercury removed and the amount you started with shows that you have left about equal parts of mercury and alloy in the filling.

Usually the amount of mercury left in the filling is a little greater than the alloy, though not very much. For this given alloy, then, the proportions to be used are 7 of mercury and 5 of alloy, and the proportions to be left in the filling are about 5 of mercury and 5 of alloy.

If you work the alloy and mercury thoroughly you will be able to remove much more mercury than you will if you only work it a little. Of course you will also by thorough working remove a greater amount of the alloy which has gone into solution in the mercury, but this will not change shrinkage into expansion nor expansion into shrinkage. Analyses show that the alloy that has been removed in the excess of mercury is not in quite the same proportions that it was in the alloy that we began to make the filling of. The mercury has carried out an excess of tin, leaving the filling with less tin in it than we expected. The effect of removing this tin is to strengthen the alloy.

Great excesses of mercury do very little harm if you remove them before you have worked the alloy. Simply pouring mercury into the alloy does little harm.

If, however, you knead your alloy with too much mercury it will not break down fast enough. You must have one granule rubbing against another, and not sliding around in an excess of mercury, if you want to get the alloy "fine grained" and well broken down.

Leaving an excess of mercury in a filling is an entirely different proposition than using an excess of mercury to make the filling. Excesses of mercury left in the filling facilitate the changes that I spoke of tonight, and are to be avoided above everything else.

If you are buying alloys in large quantities you should reduce the amount of mercury as the alloy gets older. A given alloy which requires 7 parts of mercury when it is placed on the market will not require over 6 parts of mercury if you keep it in your office a year, because the alloy has been a little more annealed.

In regard to the breaking up of the mass after it has began to set, I will say that you may do this quite safely once or twice if the mass has not set too soon, though it is not a good thing to practice. You all know the effect of stirring plaster, cement, etc., after they begin to crystallize. You must not break up this crystallization if you want strong fillings.

The impression that I want to leave with you is that we now have some good alloys, and that if dentists had some means of knowing which ones they were and exactly how to manipulate them, it would not be long before better fillings would be made by a large per cent of the men in our profession.

I gave you the names of a number of high percentage silver alloys made by some of our leading manufacturers, and they are very good. There are undoubtedly other alloys just as good as these, but since the object of giving this list was to show that leading manufacturers are making both kinds, I stopped when I had accomplished this. There is one alloy in particular made in this city, that is very good, though it does not fall into either of these classes.

The thing I want to accomplish is to drive from the market the alloys made by men who are inexperienced and are not willing to purchase the necessary equipment to enable themselves to get some experience.

In conclusion let me repeat that after you have selected a good alloy work it thoroughly and do not leave large excesses of mercury in the filling or you will certainly get the changes that I have called your attention to tonight, and at the very best you may get some of them. (Applause.)

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held November 13, 1906, with the president, Dr. J. E. Hinkins, in the chair.

President Hinkins delivered his annual address.

DISCUSSION.

Dr. L. L. Davis:

The president's address is well worthy of thought, and I would like to have had a chance to digest it a little before speaking on the subject.

The main part of the paper relates to the subject of dentistry as a part of medicine. I know that there are those who think dentistry is a profession by itself, but the more we look into the matter the more we see a way in which dentistry is being divided up into specialties, and the more we must become of the opinion that certainly dentistry is only one phase of the medical profession. Today, with our colleges increasing the length of their course to four years, the studies that form the foundation for all their practical knowledge, the studies of anatomy, physiology, bacteriology, pathology, etc., are given in the medical school, and without these studies it is impossible for a dentist to practice dentistry today intelligently, so that whatever may have been the opinion fifteen or twenty years ago, a great many of these men have changed their ideas, and today I think our president voiced the sentiment of probably the majority of the thinking men of the dental profession when he said that dentistry is a branch of medicine and one of the specialties of the healing art.

The review of the work done during the year shows that most of it has been done by gentlemen outside of this society, which is something very rare for this organization. We have taken a step outside, and while it is refreshing and profitable to listen to papers by men who are brother practitioners, yet I think this society is large enough and energetic enough for its members to prepare their own papers during the next year, and that it would be a good idea to see a few more papers contributed by our own members.

Dr. C. S. Case:

I would like to compliment Dr. Hinkins on his paper and on the high order of executive ability he has shown throughout the year as president of this society.

These periodical returns of election days seem to be coming faster, a little nearer together all the while. They remind us old young men that time is passing and we are getting along in years. It does not seem but six months since the election of officers occurred before, at which time the members of the State Board were also with us, as they are tonight. When I first came to Chicago and had the honor and pleasure of becoming a member of this society, through the kindness of some of my friends, these yearly periods did not seem to occur nearly so often. I want to say on this occasion I consider it one of the greatest uplifts of my life to have had the opportunity to rub against the talent that exists in this society. And while I have not been in attendance as much as I feel I ought to have been. I never come here but what I resolve never to miss another meeting.

Dr. E. J. Perry:

I wish to congratulate our president on his able address. There is a good deal of thought in it, and with Dr. Case I wish to express my appreciation of his skill and uniform courtesy as a presiding officer.

I take issue with him about the profession of dentistry. I believe, gentlemen, it is an independent profession. We owe nothing to what they term the mother profession. We knocked at the door of the medical profession and they turned us away.

I noticed that our president said that American dentistry all over the world was known for its excellence, for the position it occupies in the esteem of the world, and that American dentistry leads the world; and yet he quoted the methods of the English, German, French, etc., to prove that it was one profession. The way we have made dentistry in this country is a very good way to keep it. We have educated American dentists independently of the medical schools, absolutely. You can go to a medical school and graduate with the highest possible honor, yet you will be no more fit to practice dentistry than a veterinary surgeon. Dentistry can never be taught in a medical school. It is true you can teach physiology, chemistry, anatomy, bacteriology and other branches, and it is true that the dental colleges teach those branches, and it is also true that there is no difference between bacteriology and the other branches or studies I have mentioned in the medical and dental schools. But what of that? It seems to me that we had better continue in the same old route.

There is a class of individuals in this country who do not believe in revising the tariff. Senator Beveridge has characterized them as "stand patters." He said with considerable force that the "stand patter" was unprogressive. I am not a stand patter in this matter of dental education by any means. I heard Dr. Senn make the statement that our dental colleges taught dentistry better than the medical colleges taught medicine. I think that is generally conceded to be true. Another thing: If we were a branch of medicine as the oculist, the gynecologist, the rhinologist and all the rest of the ologists, there would be no separate law regulating the practice of dentistry as there is now. We have a separate law regulating the practice of dentistry in every state in the Union, the same as they have a pharmacy law. It is not any honor to us to be a branch of the medical profession that I can see. There are a great many things in common between us, but not one in ten of medical men knows when the first permanent molar erupts. Their knowledge of dentistry is humiliating as applied to the elementary principles of dentition. They pay little or no attention to the jaws. It is true medical schools have their teacher in oral surgery. I do not know, but it does not seem to me the professor of oral surgery has ever made any impression upon the graduates that have come to me. Some of them seemed to have no better knowledge of oral surgery now than they ever had. I have been told that students do not attend one-half of those lectures. May be I am not right. We have a professor of oral surgery here who is connected with one of our best medical schools, and he can probably tell us the truth about it. You have got to show me before I will take that side of it.

A word or two with reference to the papers that came from the outside. Being chairman of the Program Committee, I felt that papers contributed by outside members would be entirely welcome. I agree with Dr. Davis that we have sufficient ability in our society, but our papers are written too quickly. There is not enough study put on them. The essayist has not sufficient time to write his paper. It seems to me that there should be a complete change in the manner of preparing our papers; that a member writing a paper should have it on his mind at least nine months before he reads it. He can accumulate material and statistics and take up collateral reading and study and produce a paper which is worthy of the society. This is no reflection on the papers that have been read. If it was it would reflect on my own papers as well. If we undertake the preparation of papers on such a plan as that the quality will be vastly improved. The dental profession looks to this society for orthodox teaching. Our pronouncements are taken as authoritative professionally, and it seems to me that we should live up to that reputation; the reputation that this grand society has made in the years that have gone by must be maintained. We have the material. We have the writers and the thinkers, and there is no reason why every one of our papers should not be classics.

I love my profession all the more as the years go by. I love my professional work; I have more enthusiasm. I wish to say this, that among the greatest honors and pleasures of my life is my membership in the Odontological Society. Therefore I can say amen to all those beautiful sentiments.

Dr. T. W. Pritchett, of White Hall, was asked to take part in the discussion. He said:

I hoped you would pass me by, but I wish to assure you of the high appreciation I feel in having this privilege to hear an address from such a source. It is a great honor to me to be with you. It helps me along to have such opportunities, and I am delighted. I presume you will hardly expect me to enter into a discussion of the topics mentioned in the president's address, as I am not familiar with them. I thank you for the invitation.

Dr. L. S. Tenney:

I wish to compliment Dr. Hinkins on his paper. Whatever he does, he does thoroughly.

I was glad to see Dr. Perry take the position he did, because he has expressed my sentiments exactly, and I did not know but what I would have to stand alone in that matter. An intense love of independence has always permeated every fiber of my being. I was taught in early life by my father to be independent, and I recall very vividly a favorite expression of his, that he would rather see me peddling peanuts on a street corner and be independent than to work for any man. And that very spirit of independence I have carried into the profession I belong to, and, for my part, I feel a good deal more pride when I consider the work the dental profession is doing, with all the contributions it is making to scientific study and research, in being called a plain dentist and a member of an independent profession than simply an appendage of the medical profession. If any one can advance good reasons why we should become a part of the medical profession, then I am willing to be convinced. But my feelings are now that we would not elevate ourselves; we would not improve ourselves; we would not dignify our profession by such an alliance.

I see before me in this little Society, composed of fourteen members, four men, at least, who are regarded as authorities on the particular subjects with which they deal the world over; whose contributions are regarded as authority, and are quoted the world over. I see before me Johnson, Brophy, Cook, and Case, not to mention others, and when I think of that and think what they have done for the elevation not only of dentisry, but of medicine as well, I am proud to style myself a member of the great dental profession, and not simply an assistant to the medical profession.

Dr. C. N. Johnson:

I have enjoyed the President's address very much. He has provided us with sufficient material for a prolonged discussion if we were to take up the different items he has referred to. I am only going to touch on one or two. Before I say anything further, Mr.

President, I want to pay a tribute to our guests. Dr. Pritchett made a remark that touched me keenly when he said he deemed it an honor, a privilege, an event almost, to find himself associated with us on these occasional visits of his to Chicago. I want to take this oportunity to assure him and the other guests here that we as a society feel honored to have them with us. The compliment is to us rather than to you. (Hear, hear.) We are always proud to welcome to our little coterie here such men as these; men who are laboring hard to make dentistry what it is; to establish dentistry on its proper legislative basis in our own state. I do not believe that we often stop to think with sufficient seriousness of the debt we owe to these men who are safeguarding our interests, and not only that, but safeguarding in a broader sense the interests of the people of the state, and it gives me great pleasure to have these men with us on these occasions.

One remark in the President's address appealed to me very strongly because I have been paying some attention to that recently. Dr. Hinkins made a comparison between the development of dentistry up to fifty years ago and the development of dentistry since then. Now, Mr. President, I have been looking into that matter somewhat recently, and have had occasion to look up some of the advances in our profession in the last fifty years, and I want to say that if dentistry advances in the next fifty years along the lines that it has in the past fifty years we will have a profession that will serve humanity infinitely better than we have been able to do in the past. Since that time we have made advances in the most fundamental aspects of the development of our profession in a way that never occurred before in the whole history of the world. The rubber dam has been introduced in the past fifty years; the best we know about dental caries have been developed in the last fifty years. Orthodontia as a science has been developed within the last fifty years. Oral surgery in its best aspects has been developed within the last fifty years. I might enumerate a whole category, making up almost the entire field of dentistry, as we practice it today, but it is not necessary. That to me has been very encouraging, and I sometimes think we do not go back into history often enough. If we did, we would take courage and not feel so disheartened as we sometimes are with the progress we are making.

These annual gatherings are to me an especial occasion of introspection and of encouragement, and I believe we all go from here better men for having these milestones each year.

I have one suggestion to the Board of Censors in regard to papers to be read at the meetings. I feel that the Board of Censors should probably go a little further than they have done in formulating the program of the Society. It should select essayists longer in advance. Essayists should be furnished with subjects, six, nine or ten months in advance of the reading of their papers, in order to give them opportunity to properly deliberate on their subjects and to prepare papers so that they will stand as examples for the profession to follow.

Dr. Elliott R. Carpenter:

The annual address of our President was so full of suggestions that I find it rather hard to discuss it intelligently. I want to express my gratitude for the terse résumé he has given of the work of the year. It has been suggested to me by the remarks of Dr. Davis that it would be just to speak a word in behalf of the Program Committee.

The Program Committee this year brought in several gentlemen from the outside, who gave us very interesting and instructive papers. I think it is one of the best things that has been done for this Society, and I think it is one of the best things that can be done for any society at every certain period. You have all been in company with a gentleman or a group of gentlemen some time during your lives for quite a while. You talk about the weather; you talk about hunting, or the things that are most pertinent to a house party, a boating party, or a hunting party, whatever it may be, and after several days you are just as good friends; you are better friends, but you have talked yourselves out. You disband at the end of a certain period, and you meet again. You have had a rest; you have seen and heard new things, and you start at it again. In this little Society there is a very strong bond of love and fellowship, of professional interest and vim, which, after a while, does get worked out, and I believe a little new blood from the outside gives us a rest, gives us enthusiasm and a new opportunity, and I think Dr. Perry's scheme of bringing in new blood temporarily is the best thing that has ever happened. Had I been called on a year ago to present a paper before this Society I would have been up a stump, and when the time comes we have had a rest; we have had new thoughts, new ideas, and new personalities, and I believe we can go to work with renewed vigor.

Dr. G. H. Damron, of Arcola:

I do not know what I can say tonight without repeating what I said at your last annual meeting. I do not know whether I am addicted to egotism or not, but Dr. Hinkins' address brought out a discussion from Dr. Perry and Dr. Tenney which was exactly along the line I took up a year ago, and those who do not recall what I said may find a report of my remarks in The Dental Review. I advocated and urged that the dental profession should stand on its own footing. I gave some statistics regarding cures of the medical profession. I learn a great deal from coming here and rubbing against you, which I have done in the past, and I still adhere to the idea that the dental profession should stand alone. As Dr. Perry has said, we knocked at the door of the medical profession and they did not open it for us, and we are not going to knock again. It was Bobby Burns who said,

> "O wad some pow'r the giftie gie us,
> To see oursels as ithers see us."

I am speaking of the dental profession. Let us see ourselves as the world sees the American dentists. Show me any civilized country on the face of the earth that has not got graduates of one of our Chicago dental schools as the leading practitioners of that country. Show me anyone, with the exception of two crowned heads of Europe, who has not got a graduate dentist from America as court dentist. Dr. Brophy has got some foreigners as students in his college today to my certain knowledge and the other schools have, I presume, foreigners in them, and I want to stand up first, last, and all the time with Dr. Perry and Dr. Tenney for the dentist to stand on his own ground, for whenever we do a piece of work the public expects us to know what the result is going to be when it is finished. With the medical profession they always say, "We hope so." With us, gentlemen, it must be a certainty. I thank you.

Dr. Truman W. Brophy:

The views I have on the subject that has been presented by the

President in his address bearing on the position of the dentist have been expressed very often, and I have endeavored in expressing them in the papers I have carefully prepared to give good reasons why I hold them. I know quite well what the President's views are. I am always sorry to be obliged to discuss the question of what dentistry is. I remember what the late Professor Garretson said at a meeting of the Faculties' Association many years ago in response to a paper written by a member on the question of what is dentistry. The writer wanted to have something done to impress upon the people at large the importance of the dental profession. In order that the dentist might take a higher place socially, he should be accorded some mark of distinction. Garretson said it would be like Vanderbilt going over the whole country and lecturing to people to impress upon them as to how rich he was. We do not need to ask anybody to do anything to give us standing. The history of the dental profession may be pointed to with pride, and we can say, "This is what we are," and there let the discussion end.

To follow such teaching as the President's address bearing on the position of dentistry, and to assist in establishing it as a specialty in medicine—I say this advisedly—through strenuous efforts I nearly lost my life. I took up the study of medicine after I had finished my course in dentistry and graduated. I took three courses of lectures, when only two were required, because I felt two courses were not enough to equip myself thoroughly.

When the Chicago College of Dental Surgery began to teach dentistry we started as a post-graduate school, to which only medical men or those studying medicine were admitted, with the view of graduating in medicine first, thus putting ourselves on the plane of specialists in medicine. But how did it turn out? The President knows too well. He was a student at the time. There were physicians who thought they could acquire a knowledge of dentistry in a short time, and could become specialists in medicine. They were medical graduates. They were finally obliged to abandon dentistry because they were not the kind of men who would make, as a rule, with few brilliant exceptions, high-class dental practitioners.

I feel deeply on this subject. To place dentistry all over the world as a specialty of medicine would be a retrograde movement. We would be placed in that most humiliating position which the dentists in some countries abroad are in today. Where is the medical institution of learning that can send its graduates abroad and have them given high places of distinction such as some of the graduates of our dental schools receive? What is the American medical man on the other side of the Atlantic compared with the American dentist? He has no such a place accorded to him as has the American dentist who has been properly equipped. To make dentistry a specialty of medicine would mean to rob the people of America of one of its most honored and most dignified bodies of men. Should we wipe out the Boards of Dental Examiners in this and other states and place our young men who want to practice dentistry under examinations conducted by medical boards? What does a medical board know about the qualifications of dentists? Let us look at England, France, Italy, Spain, and Germany, and ask the question whether we wish to do away with our state laws, our state dental examining boards, and place the dentists before medical examiners to be examined in regard to the technicalities of the numerous branches which enter into the curriculum of dental study? The average physician is incompetent to conduct an examination of a dentist. What would dentistry be today if such were the case? Every medical graduate in Germany and in France is a legal dentist. He may practice dentistry. The essayist has been abroad, and he knows the wretched state of affairs that exists there. Such men as Godon, Miller, and many others I could mention have struggled to get a dental examining board in order that they might raise the standard of the dental profession in Europe. *No man can be a specialist in a profession to which he does not legally belong, and in which he has not been educated.* I do not like to discuss this question, nor do I think it should be discussed in our associations. Let us stand for what we are. The people know and appreciate our work. The Bible says, "By their works ye shall know them." Let us thus be known.

I would rather have my boy, if he were going to be a dentist, after he had finished his studies in a dental school, take a course of instruction in the Massachusetts Institute of Technology, or a course of study in civil or electrical engineering, because he would be able to use that knowledge, than I would have him study gynecology, cutaneous diseases, or orthopedic surgery, all of which branches he *must study* if he wishes to graduate in medicine and become a legitimate medical specialist. The dental student has no time to study these subjects. They are outside of his sphere of usefulness. The curriculum in our dental schools is spreading out, so that the student must work hard all the time to get enough knowledge of his profession to start with. Supposing a candidate wants to practice orthodontia, where is the medical board that can examine a man on that subject? Yet the author says dentistry, which includes orthodontia, is a specialty of medicine. It can not be done. We are talking about a condition of things that is absolutely impossible to establish. We might as well have the State Board of Health examine those who want to be civil or electrical engineers as to expect them to examine men to determine their qualifications to practice dentistry.

The art side of dentistry is independent of everything pertaining to medical education and to the treatment of disease. There is much in common in the two professions, medicine and dentistry, along the lines of anatomy, physiology and pathology; but those branches are not strictly and purely medical. For instance, chemistry is a science *per se*. A little chemistry is used in medical practice, but it is not a branch of medicine. Physicians can appropriate from all the sciences. So can we. And we do. We can not very well devote four or five years of study in a medical school to certain branches, and then three or four more in a dental school, to get the knowledge necessary to make skillful dentists. As Professor Griffith said at a meeting of the International Dental Federation in Cambridge, England, the man who teaches anatomy to dental students should be a dentist. Anatomy is taught now in some medical schools by men who do not know anything about the practical use of it in surgery. Dr. Senn bitterly complains that these teachers do not know the practical application of surgical anatomy, and that when he lectures to his students on anatomy with regard to certain operations they can not comprehend his conclusions. We believe we have taken a step forward in the Chicago College of Dental Surgery since the death of Professor Skelton, by putting a man in his position who is a dentist as well as a physician and a good physiologist to teach physiology. This man will teach the boys the kind of physiology that dentists should know. I believe it would be better if every man who teaches anatomy in a dental college was a dentist, because then they would very likely teach those parts of anatomy which will have a practical bearing on the dentists' work. We have not time to learn everything; we must learn that which we can use. I am a believer in utilitarian education. Let us learn how to do our business.

I am a graduate of medicine, and naturally you would think I would follow the lines presented by the President. But, gentlemen, I am a dentist. I like to associate with dentists, and I confess to you frankly I feel a little more at home with them than with medical men, yet some of my best friends are among medical men.

Dr. Perry quoted Dr. Senn as saying that dentists were better prepared to enter upon their life work than the average medical graduate. Dr. Bevan made a similar statement, that the dentist, as he goes out and engages in his life work, is better equipped to undertake it, to carry it on, than the average medical man. He has had a lot of practical experience which the medical graduate can only gain through hospital work. So I say, let us stand by our work, and help the dentists on the other side of the water, instead of depressing their very souls in declaring here and there that we are specialists in medicine. They want to relieve themselves of that embarrassment by building their profession up instead of dragging it down.

Dr. C. S. Case:

It seems to me Dr. Hinkins has been misunderstood. I do not think he advocated the formal or legal placing of dentistry as a specialty of medicine. I think in his paper he carries out the thought that we really *are* a specialty of medicine whether anybody accepts it or not. Why? Because we are treating medically and surgically diseases and deformities pertaining to the mouth of the human body, and that *is* a specialty of medicine. I do not think, however, Dr. Hinkins wishes to have dentistry legally put on the basis of a specialty of medicine with all that it would entail.

Dr. Hinkins:

Dr. Case has expressed my views exactly.

Dr. J. G. Reid:

I must confess that I have very little to say since the President has taken back what he has written. I very well remember the night when this question was agitated and presented at a meeting of the Chicago Dental Society. I remember distinctly the remarks that were made by Dr. Brophy, which appealed to the better judgment and interests of the dental profession, and if they were not so regarded at that time they ought to have been. This matter was voted on as to whether dentistry was a specialty of medicine, and I believe the vote was 29 to 31. There were simply two votes which made dentistry a specialty in medicine.

I was very much pleased with the President's address. I was ready to talk upon this phase of the subject of dentistry being a specialty of medicine, as I interpreted his remarks. I put myself on record at that meeting of the Chicago Dental Society. I believe we are a distinct profession and that every tub should stand on its own bottom, and I believe we are fully able and qualified to stand there.

Another point I had in mind was with reference to the program. It seems that some reflection has been cast upon the Program Committee for inviting men from the outside to read papers before this body. The papers that were read by outside men were interesting and instructive. Of course, we have talent enough in this Society to furnish material for our deliberations. We received many valuable points from the address delivered by Dr. Casey Wood before this body less than a year ago on "The Use and Abuse of the Eye." We never would have gotten so much information of value anywhere else in a short time. I have thought a good deal about it since the delivery of that address. We abuse our eyes. I have nothing but respect for the committee who sees fit to invite men from the outside to read papers when they have a bearing upon our work, and so far as my personal feeling in the matter is concerned I would be glad to see this innovation continued, and this is showing no disrespect to the talent in our own body.

Dr. J. H. Woolley:

This address recalls what I read a long time ago—the philosophy of George Henry Lewis. It was almost like a novel. George Henry Lewis had the power of simplifying thought. And so in regard to the work of our Society. Dr. Hinkins has simplified it. It was condensed and interesting. His address showed a good deal of thought, and I think it is one of those papers that we should read and think over again. There is more in it than would appear. It may be compared to a fine piece of acting. When Booth played Iago there was more seemingly in the movement of his eyes and in his personality than in what he said. There was great dramatic effect.

And so with regard to this paper. It seems to me, when we come to read it, there will be found more back of it than what we have heard from its reading.

In regard to the profession of dentistry, I have always thought we were an independent profession. I recall what Emerson says in one of his essays: "Assert yourself; put all else under your feet." I think that is what the profession of dentistry has accomplished, and yet we must recognize to a certain extent an interdependency in our relationship. We can not get out of our human relationship; when we try to be independent and not come in contact with mankind, then we become a back number. To some extent the medical profession has given spur and ambition to us to attain to higher things, and while the medical profession dates back to the time of Hippocrates, and its growth has been a gradual evolution, it seems to me it is a wonder of the times that dentistry has accomplished what it has. Dr. Pritchett and some of the older gentlemen recognize this fact in the past forty or fifty years when they compare that time with the present. If they were living in the past, and are living today, they would stand in awe of what has been accomplished in biology and in all of those kindred branches that have helped to elevate the profession. Those who lived in the past could not dream of what has been accomplished today.

In regard to dentistry, I read an article in the *Atlantic Monthly* entitled, "The Soul of Paris." It referred to the soul of London, to the soul of New York, to the soul of Washington, to the soul of Chicago. Each city had its expression. It stood for something. Chicago for commerce, and other cities for this and that. Now, it seems to me, that dentistry in America has its soul, and we as dentists are a power in the world, and if we would continue to exert that power we must persevere. There is so much beyond that in order to keep up and take advantage of our opportunities we have got to keep digging, digging, digging, or the world, catching inspiration from our efforts or from what we have been, will go ahead of us.

Some brother here made the remark with reference to Dr. Hinkins' work in this Society. It has been a force that has unified us. It has kept us together. It has spurred us on in a quiet way. Someone has said that the greatest force of high potentiality that carries out the power in the world is the hidden force, and I think that quiet force that Dr. Hinkins has shown has been the force that has made us what we are today.

Colonel Long was asked to say a few words. He was introduced by the chairman as being a member of one of the old Virginia families, whose wife is a direct descendant of Washington.

Colonel Long said: Mr. Chairman and Gentlemen—I feel very much embarrassed tonight, for this is entirely unexpected to me. I met my old friend, Dr. Hinkins, today, who said, "Come on and go with me." I rebelled, but his hypnotic influence was so great that I responded. I do not regret it, for I have met here congenial spirits who are actuated by that high and noble impulse to do all they can to elevate their profession and to relieve suffering humanity.

Under the shadow of the Blue Ridge and on the banks of that crystal stream whose waters dance in wavelets to the sea—the River Shenandoah, called the Daughter of the Stars, half a century ago a boy was born. He started out in humble life to take his position in the world, but with that energy and spirit that characterize those who never fail he turned his back upon the blushing, vine-clad hills of his happy home and said that he would go into fields where there was more activity and where he could accomplish more. And tonight I find him here, the president of an exclusive club. He has attained that position in life that has won for him the admiration of all who know him, and I compliment him on his attainments, and I will carry back with me to the old state recollections of the men with whom he is associated, which will always be cherished, and I am sure they will be proud.

Your chairman has asked me a question which is a delicate one. We have had tonight a great variety of subjects discussed, and I have asked myself the question, "Is there anything new that I can add to the pleasure of this company," and in answer to this I ask you to go with me down the banks of the Potomac below Fredericksburg. There is an old home called Marmion. It is there today, and has stood for more than a hundred years. It was in that house that Betty Washington, sister of George Washington, married Fehling Lewis. About twenty-five years ago, while down in that country, I met a young lady who afterward became my wife. She is a descendant of this same family. In this old house, standing there today a relic of antiquity, with its niches and its columns, and peculiarities of the day, there are pictures upon the walls in almost every room, and they are as distinct today as they were then. There is Lafayette; and a ship afire; there is General Washington; there are various pictures and characters on the walls. Now, gentlemen, who did that painting? That is the remarkable point. I cannot answer. No one can. History says that Fehling Lewis, during the Revolutionary war, took in a wounded soldier from the enemy. He took care of him; he nursed him back to life, so to speak. After the war was over this soldier wanted to do something to repay this man for his kindness. He goes out into the woods; he looks about among the soil; there are no paints; nothing of the kind; but he mingles various soils and ingredients found in the woods, whatever we may call them, picks them up and there makes his paints, and went to that house and painted these pictures on the walls, and there they stand today as monuments to his ingenuity.

I wish to say to you, gentlemen, if you will visit the Jamestown Exposition, which will begin on the 7th day of next May and terminate in December, I am sure you will be repaid for taking this trip. It will be a world exposition. On the placid waters of the largest harbor in the world will ride at ease the largest collection of naval and marine structure ever before collected together.

This historical work at Marmion can be seen, and many other things of interest, which, I am sure, the people of the Western country and all over the country will appreciate when they see them. (Applause.)

Dr. George W. Cook:

The president has given us an excellent résumé of the work of the society during the year, with some personal ideas and beliefs of his own.

When Dr. Brophy was speaking there came to my mind an incident which illustrates how profoundly sometimes members of the medical profession are educated, and how distinctly and technically differently we are educated from those of the medical profession as a whole. I got into a discussion with a very able medical man not long ago, who has been a teacher of histology for many years. We were discussing the histology that interests the dental profession. He said to me, "Have you ever examined the pulp of a tooth under the microscope?" I replied, "Yes; once." He said, "Do you know that there are no blood vessels in the pulp of the tooth?" I replied, "Not me." He said there were not. I said, "When I puncture the floor of a pulp chamber, or rather pass a broach into the pulp of a tooth, and blood escapes, where does it come from?" He said, "Oh, well, that comes from irritation." I said to him, "Let us suppose there has been no previous irritation there; that I immediately put a drill into the pulp of a tooth and get blood from it, where does the blood come from?" He replied, "That the irritation caused by inserting the drill in there produced it." I said, "Supposing I should extract a perfectly sound tooth from the jaw, remove the pulp, and should find red and white blood corpuscles in there and all the things that make up the blood, where does the blood come from? How does it get there?" He answered, "From the irritation of pulling the tooth." (Laughter.) I asked him whether there are any nerve cells in the pulp of a tooth? "Yes," he said, "there are." What are they there for? He said he did not know. "I suppose," he said, "they are simply prolongations of the nerve endings at the end of the root, and finding an opening there they passed in." I said to him that his remarks reminded me very much of a story told about Bill Nye, who was by cultivation going to bring the vegetable kingdom from a low up to a higher state. Bill said that inasmuch as Darwin, Huxley and other scientists had raised man from a monkey, he was going to do something similarly great in the vegetable world. And so he planted in his orchard down in North Carolina apple trees, and expected to grow apple butter instead of apples, and that grape vines would be growing wine instead of grapes, etc. (Laughter.) I told him that I could not understand his philosophy.

I suppose we ought to start out to evolutionize the whole physiological process and divert these nerves from sneaking in at the apical end of the root and getting in our way.

Of course, we have to acknowledge our indebtedness to the medical profession for many things, but medical men have not by any means developed anatomy; nor have they developed physiology or chemistry. In fact, the poorest chemists we have in the world today, on the whole, are medical men, taking it from the standpoint of science. The practice of medicine differs so materially from that of dentistry that it hardly seems worth while for us to take upon ourselves the obligation of helping the medical profession to develop any phase of their science or art, or for them to help us to develop any phase of their science or art. I acknowledge the skill, the ability, the perseverance, the education and culture that exists in the medical profession, and I appreciate it. But I also appreciate the culture and education of men who are not in the medical profession. We have to look to specialists in all of the sciences and gather information from their experience, and I see no objection to inviting to our meetings such men as we have already had here, and I want to say in this connection that some of the most useful thoughts I have gotten this year have been derived from the two outside essayists we have had at our meetings. I do not think it would be out of the way if we invited a physiologist, one who is strictly a physiologist and nothing else, to read a paper before this body or to give a talk; or to invite a man who teaches chemistry solely as a science to read a paper or to give us a talk; or a mechanical engineer, because from those sources we draw our inspiration and knowledge to advance our own profession. We cannot confine ourselves. We must think for ourselves, and I rather think that the emphasis which Dr. Hinkins put on this subject is more in the direction of allying ourselves with the medical profession for such things as we are unable to obtain, and get such information as we can. rather than to become an integral part of the medical profession and be known only as specialists of medicine. Personally I do not care whether I am a part of the medical profession or of the dental profession. I think I have got as much protoplasm as the average individual in either one of the professions; probably it may not be in the form of gray matter or other forms viewed from a microscopic standpoint. It makes no difference to me what we are. We have made our impress upon not only the medical profession, but on the professions as a whole. We have established our place in society, and as we become more and more cultivated, come to a better understanding with ourselves, we will certainly become better recognized among all of the learned professions and learned societies and culture of the world. But we are young.

It was interesting to me in attending a banquet the other evening in St. Louis to hear Dr. Black speak of his travels for ten miles across the country to take a boat to go to St. Louis to attend a dental society meeting in the early days. We do not find anybody taking such trips now. The advanced education which our societies furnish now is nothing more nor less than a post-garduate school furnishes, and it is placed at the disposal of every one, and the profession is furnishing it entirely free from medicine, from the laity, or from any other sources. The dental profession has furnished its members with education by itself. There have been no endowments, no bequests by any one to dentistry and to the dental profession. Notwithstanding that, dentistry as a profession is recognized as one of the greatest arts of modern times. Why need we to cater to any one, or ask any one to be our superior, or to be anything more than a co-worker in the field of science and art that we are all specially interested in for the benefit of humanity, and for the benefit of the profession as a whole? The dental profession has nothing to regret. We have plenty of men who have made great sacrifices for our profession; who have devoted their lives to education, to study, to research, and we do not have to call on the medical profession for any assistance. Once in a while we invite a medical man to our meetings to give us his opinions on certain things, and the medical profession asks us to do the same thing. That is the way it should be; yet I do not think it is necessary for us to become a part of or be considered as a specialty of medicine. We are a specialty of the healing art. We belong to that family of the healing art, and we cannot get away from that, and we do not care to.

Dr. Truman W. Brophy:

I omitted to say what I intended to say regarding the president's address in my previous remarks. I appreciate very keenly the efforts our president has made from the day when he left the shadow of the blue hills of Virginia. I knew him before he became a student in dentistry, and I know the struggles he had to win for himself the place of distinction which he now occupies. I realize that he has thought this matter out carefully, and that he has suggested to us very many valuable thoughts, and I would not be doing myself justice if I were to omit saying what I have said bearing upon the splendid work he has done in this and other countries, because his work has been recognized all over the world. I cannot, however, subscribe to the question of our being a fraction of a profession. We have assimilated those branches of science in all the different professions, callings and vocations which will equip us to become dentists, whether in the field of medicine, chemistry, civil or electrical engineering, or what not.

We seek for knowledge that will help us wherever we may find it, and when we get it we feel grateful to those from whom we have obtained it.

I have thought of the organization of this society, in 1883 at No. 70 Randolph street, in the office of Dr. Harlan, who really was the promoter of the organization. When we met that night we elected Dr. Cushing the first president. We had with us Dr. Swain, Dr. Black, Dr. Gilmer, Dr. Newkirk, and others. As I look about me this evening I find I am the only one who was present that night, and what changes have taken place during those twenty-three years! I think more of this society than of any other of which I am a member. I believe other members think of it as I do. I think any one of us who finds it impossible to attend a meeting feels that he has really made a sacrifice. Dr. Perry made a remark one night that he could not afford to stay away from any of these meetings, no matter how uninviting the program might be or the subject for discussion. I have been well repaid for coming here tonight. If we had not had this splendid address I would have been repaid for coming here and listening to the remarks of our friend from Virginia and those of members of the State Board. We all belong together. We are all working for the benefit of mankind, no matter what our attainments may be.

Dr. Hinkins (closing the discussion): I am very much gratified at the discussion that my address has elicited. I was well aware, when I prepared this paper, that I would stir up a hornets' nest, and would not get the information I wished to obtain without taking the position I did. I am sorry that I have not obtained that knowledge or information I sought. Drs. Case and Davis seemed to have caught the original intent of my paper. Dr. Cook hooked on toward the latter part of his talk.

Ever since that motion was made before the Chicago Dental Society, a year or so ago, I have been in a quandary as to what the degree "Doctor of Dental Surgery" is. When I have had a few spare moments I have been thinking along that line, and the address you have heard is the result of that meeting. I have no apologies to offer. I knew it was going to stir up a lively discussion. I was conscientious, and as I said a few minutes ago, I have not obtained the knowledge I was seeking. But it has been well said we are a part of the great family of the healing art. If we are a part of that family of the healing art, why should we not recognize the parent body? You cannot deny the fact that medicine is not the parent body of the dental profession. If we are not a part of the family of the healing art for the alleviation of human suffering; if we are not a part of medicine, then the dermatologist, the ophthalmologist, etc., is not. Of course, the dental profession has done great work by itself; but if we will go back to commercial pursuits or to the larger universities or individual institutions of learning we will find that the parent body is the originator, and we must knock at the door of the parent body before we can expect to receive any recognition. What part of the healing art are we if we are not a specialty in medicine? Dentistry is recognized as a specialty of medicine in Europe and certain states here in America. If we are not a branch of the healing art, how are we going to classify ourselves?

As the discussion proceeded tonight it reminded me of a little incident that happened this evening. As we were coming across Michigan avenue we heard a little girl yelling for her mamma. I said, "What is the matter, little girl?" She replied, "I want my mamma." I said, "Who is your mamma?" She replied, "I don't know; I want my mamma." Most of the arguments that have been made tonight reminded me of that little girl. You want to be specialists in medicine, or to become a separate branch of the healing art, but how are you going to get it except through the parent body? Where do we stand? I thank you.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States and its possessions, Cuba, Canada and Mexico. All other countries $1.75 a year.

EDITORIAL.

STATE BOARD EXAMINATIONS.

The season is approaching when the colleges are to turn out their annual products, and the boards are to review the work done by the schools through the medium of examinations. In most States all candidates for license must pass an examination before the boards, no matter what their previous qualifications may be, and the laws which established this provision were in large measure endorsed by college men. It was felt to be a salutary influence in dental education to have the graduates of all colleges subjected to the same tests by the boards and the principle would surely be sound if it were at all possible for State boards to fill the true function of examiners. But this is by no means possible, and in saying this we are the farthest from casting any reflection on the personnel of the boards. It is true that the membership of some boards in the past has not been above reproach, but this is not the question with which we wish to deal at this time. Given the most upright and capable board in existence, and they are so hedged about by adverse conditions and so handicapped by circumstances that it is wholly impossible for them to adequately pass judgment on a certain class of men as to their eligibility for license. They are able to judge of the exceptionally bright candidate or the exceptionally dull one, with the evidence overwhelmingly one way or the other, but of the medium class, where a long study of the individual in his temperamental tendencies as well as his professional attainments is necessary to a just decision, they are—they must be—from the very nature of things entirely at sea. With a conscientious college man studying the young men under his teaching most carefully for three years or more, it is often a very difficult thing for him to decide as to a candidate's fitness to practice, and how can the most astute and discriminating board judge of this after a single week's examination?

It may be stated that all doubtful men should be rigidly excluded, but the crucial question arises as to who are and who are not to be considered in the doubtful list. If examinations are equitable and justifiable, their sole purpose should be to determine the candidate's ability to properly serve the public in the care of their mouths and teeth, and this involves something besides the ability to glibly answer a lot of set questions, which are oftentimes learned by rote and recited like a parrot. In this respect college examinations as well as State board examinations often aim wide of the mark in judging of the merits of a candidate.

Our entire system of examinations should be revised. They are out of date in the present necessities of dental practice and should be relegated to the junk heap of effete custom. To outline in full our idea of a proper examination would require too long at this time, but briefly stated it is this: A candidate should have placed in his hands a patient with the teeth and surrounding tissues in an abnormal condition. He should diagnose every trouble and suggest the remedy. Then he should demonstrate his ability to properly perform the necessary technical procedures to result in the greatest good to the patient. He should treat this case from beginning to end precisely as he would if he were conducting a practice, and the patient applied to him for dental service. He should be able to tell the examiner his reasons for every procedure, and the dangers to be guarded against in his conduct of the case. He should enter vitally into the management, not only of the teeth and mouth, but of the patient, and should demonstrate his ability to control patients professionally. He should do this with not only one case, but with a sufficient number to establish his ability to meet all cases. And in all this the examiner should observe the minutest detail of the candidate—his cleanliness, means of sterilization, demeanor, etc. Of course, there should be some written examinations to demonstrate the candidate's didactic grasp of the various subjects, but they should not be loaded down with catch questions, or foolish formulæ, or observations about the origin and insertion of the flexors of the great and little toes.

This is a plea not for narrowness, but for the principle of finding out a candidate's ability to properly serve the public. As at present organized, State boards can not be expected to carry out such examinations in their entirety, but they can do something toward improving their methods and they can in many cases revise their questions, all of which is to be devoutly wished.

Colleges should also rise to something higher and better in their preparation of students and in their examinations, but they can not change their methods of instruction very materially so long as State board examinations are what they are. To put it briefly, colleges at present must aim to prepare their students to meet State boards, which is sometimes far removed from the highest possibilities of college teaching as it relates to the proper preparation of the student for his future life's work.

THE EDITOR'S DESK.

THE MIRACLE OF THE BUDS.

I wonder how many of my readers watch this miracle every spring. What a wondrous world of energy is represented by the unfolding of every plant and shrub and tree. Think of the circulation carried from the moist and mellow earth up through the roots, trunks, limbs and stems. What a marvel of chemical affinity, the juices of the soil traveling skyward to the furthermost tips of the tiny branches and there mingling with the gases of the air to produce the miracle of bursting brown and then of livid green. How busy nature is when the royal frost king breaks his bonds and yields his sceptre to the wooing of the sun. One morning in middle March I passed a tulip bed where the gardener had scraped off the straw covering, and lo, there were tiny pink and red shoots two inches high puncturing the surface of the earth as valiantly as if there were no likelihood of another frost to come and nip their tender noses. I noticed that the gardener had left the winter covering convenient to be thrown over the bed again during the chilly nights that always come this time of year.

From now on for a few months the riot of growth will be well worth watching. I have sympathy with the man who said one spring day to his companion: "No, I am not going to work tomorrow. I am going out to the parks—the buds are coming out." But, after all, we do not have to go to the parks to see this miracle. If there is a tree anywhere in our vicinity, if there is a shrub, a bush, a vine—anything that bears leaves, we can fill our soul with the ecstacy of this phenomenon. Such an unfoldment, such an evolution, such a birth. The small, hard brown husks beginning to burst and the pale green forcing its way through the loving grasp of the tiny shell till it flutters before us a miniature leaf, then growing larger, larger, and yet larger till the shrub, however small, and the tree, however big, are filled with these beautiful banners of deepening green, waving their welcome to the passer by and preparing for the time when the midday sun is so hot that humanity needs the sheltering arms of the overhanging boughs.

And think of it. In all the myriads and myriads of these leaves no two alike. What a stupendous variety of individuality. The mold immediately broken when each leaf is formed, and never another one to be formed like it. When the wonder of all of this fully breaks in upon a man it is enough to make him worship every leaflet upon every twig or towering tree.

A study of nature is one of the things which brings a full hundred per cent upon the investment—a hundred per cent of satisfaction—without the danger of being on the wrong side of the market and going down in the crash of a panic. If a man truly loves nature he has something in life to make it well worth the living.

BOOK REVIEWS.

THE AMERICAN TEXT-BOOK OF PROSTHETIC DENTISTRY. In original Contributions by Eminent Authorities. Edited by Charles R. Turner, M. D., D. D. S., Professor of Mechanical Dentistry and Metallurgy, Department of Dentistry, University of Pennsylvania, Philadelphia. Third edition, thoroughly revised and rewritten. Octavo, 900 pages, with 916 engravings. Cloth, $6.00, net; Leather, $7.00, net.

This work was originally edited by the late Dr. Charles J. Essig, and is so well known in the profession as to require little comment. On the death of Dr. Essig the editorial work was entrusted to Dr. C.

R. Turner, and the character of the third edition is ample evidence that the trust was well placed. This edition is a very great advance over previous issues, and may really be said to bring prosthetic dentistry well up to present date. It is heartily commended for its completeness and for its general excellence.

ANATOMICAL NOMENCLATURE: With Special Reference to the Basle Anatomical Nomenclature [B N A]. By Lewellys F. Barker, M. D., Professor of Medicine, Johns Hopkins University; formerly Professor of Anatomy in Rush Medical College, Chicago. With Vocabularies in Latin and English. Two Colored and Several other Illustrations. Octavo. Cloth, $1.00, net. Published by P. Blakiston's Son & Co. Philadelphia.

The expression [B N A] is a shorthand title for a list of some 4,500 anatomical names (*nomina anatomica*) accepted at Basle in 1895 by the Anatomical Society as the most suitable designations for the various parts of the human anatomy which are visible to the naked eye. The names are all in correct Latin and have been selected by a group of the most distinguished anatomists in the world.

One name only is given to each structure, and the mass of synonyms which encumbered the text-books can thus be swept away. If one of the larger text-books of gross anatomy be examined, as many as 10,000 names will be found employed, the half of which are synonyms; and if the anatomical terms used in the various standard text-books be collected into one list, the total number amounts to more than 30,000. It is no small achievement to have reduced the necessary number of names in gross anatomy, as it is known today, to less than 5,000—an achievement for which both students and teachers of the subject must be thankful.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

My Dear Mr. Editor:

The regular meeting of the First District Dental society occurred Tuesday evening, March 12. The essayist of the evening was Dr. R. H. Hofheinz, of Rochester, N. Y., who presented an exceedingly able paper on "Our Educational Evolution." He spoke of educational attainments—or the want of them—in the sixteenth century, and traced the development or evolution of educational ideas up to the present. He drew the picture strong, and then applied it to our dental educational system. This he said was scarcely sixty years old and in that short space of time could not be expected to be faultless. Nevertheless giant strides had been made and our dental educational system had taken a prominent position from which it could not be driven. He expatiated on the need of manual training for the young dental student.

The discussion was opened by Dr. Wm. Jarvie, of Brooklyn, who disclaimed being an "educator" (the society, however, agreed that he had been a most eminent educator). Dr. Jarvie complimented Dr. Hofheinz very highly. He went further back into ancient history than did Dr. Hofheinz and spoke of the fact that in the fourteenth century none but the clergy knew how to read and write. He spoke of the work which Robert Arthur had done, and at much length went into statistics concerning dental educational matters, much directly connected with New York state. Dr. Jarvie, as you know, has been for years a member of the board of censors of this state, and in that position has been enabled to learn many things concerning the ins and outs of all our dental schools. It is to his untiring efforts, with the other members of the state board, that New York owes its enviable position today. Dr. Jarvie was followed by Dr. John I. Hart, of this city, connected with the formerly "N. Y. Dental School"—now "N. Y. College of Dental and Oral Science." He approved of Dr. Hofheinz paper in all its details, and complimented him highly. He spoke of the work done in advancing dental education by the Institute of Dental Pedagogics, and emphasized the need for a special course in dental technique.

Dr. A. R. Starr followed. Dr. Starr represents the old N. Y. College of Dentistry. He emphasized the necessity for practical work with theoretical, and claims that they set the young men in the N. Y. College of Dentistry at work in the Infirmary much earlier than most other colleges. He seemed to be in favor of a return to the four year course.

Professor Hofheinz closed in a very few remarks, thanking the society for its interest in his paper.

The New York Institute of Dental Technique held its regular meeting for February on the 26th. Dr. Hector Griswold read an instructive paper on "Pyorrhea Alveolaris," in the treatment of which he poses as an expert.

At 5 p. m. that same day Dr. Griswold had given a short clinic in illustration of his subject.

Dr. W. B. Dills and Dr. R. G. Hutchinson, both of Brooklyn, opened the discussion. Dr. Hutchinson has had considerable experience in this work, and has had much success.

The consensus of opinion seemed to be that there was not so much to be attributed to systemic conditions as to want of care and cleanliness.

February 18 was the date of the twenty-seventh annual banquet of the Central Dental Association of Northern New Jersey, at the New York Athletic Club. It was in every way a success. Approximately one hundred and fifty were in attendance. After the dinner Dr. Joseph H. Vinson delivered his address of welcome.

The Hon. R. Wayne Parker, member of Congress from New Jersey, followed with a most stirring and beautiful oration on the Constitution, in which he pointed out the fact that there has been drafted only two instruments in the world which declare that all men are equal. They are the Declaration of Independence and the Constitution of the United States.

He glorified the name of George Washington. He was one of the greatest of all leaders, retiring from public life when at the height of his power. He created and brought the country up to 1860. Then Lincoln became the most phenomenal success the world has ever known.

Continuing with the constitution he said: "When falsely accused by any foreign nation appeal to your country."

Dr. W. W. Walker, of New York, said that the Jersey society had done for dentistry what the Barbazon school did for art. He complimented the Jersey boys for the recognition they have attained from every dental society of the world.

Dr. John I. Hart, in speaking of local societies as educational helps, said that if it was not for our dental societies we wouldn't have any profession. They promulgated their thoughts through our societies, papers, discussions, and clinics, which amounts to a post graduate course. The facts published become the basis of our education. But there is one weak point in all this and that is the effort to form new societies. This effort should be exerted to strengthening the existing societies. There is not a man practicing who does not receive benefits from these societies. Finally the doctor offered a toast to all dental societies.

Dr. A. W. Harlan, of New York, in eulogizing New Jersey, remarked that she has no dental or medical colleges but has three of the best dental societies in the United States. Dr. Harlan felt he was paying a debt in recognizing the courage, loyalty and brotherhood of these men.

Dr. Brinkman, the president of the Jersey State Society, outlined some of the plans of that organization proposed for the summer meeting at Asbury Park.

Dr. Ottolengui, among other things, called attention to the method that Californians have of procuring members to their societies. No "home" dentist is permitted to attend the special meetings without a ticket of admission.

Following out somewhat Dr. Harlan's thought, he said New Jersey has no schools but New Jersey has caused all schools to come up to her standard of dental educational requirements. He said dentistry was really the fourth learned profession. We have established our own schools, our own literature and our own graduation.

Drs. Taggert and Goslee, of your town were elected to honorary membership in the Second District Dental Society of New York, on Monday last, which is but another echo of the esteem with which these gentlemen are regarded and how they have endeared themselves in the east.

At this meeting the essayist was Dr. H. Clay Ferris, of Brooklyn. He had for his subject "The Necessity of Retention of Temporary Teeth, with Special Reference to the Filling of their Root Canals." The paper was quite interesting, treating the subject as it did from an orthodontic as well as a medical standpoint.

Some slides were shown which portrayed abnormalities in development of the permanent teeth due in the main to extraction of deciduous teeth prematurely. Dr. Ferris made one remark, i. e., that normal occlusion even in deciduous set is the exception," to which during the discussion Dr. LeRoy took exception. He said that normal occlusion to him was rather the rule than otherwise. Real normal occlusion attains but for a short period of a child's life, probably only during the space of one year or little longer, or from 3 to 4 or 4½ years of age, but during that period and before the permanent dentition begins to assert its influence normal occlusion does exist and irregularities are seldom present.

Dr. Ferris spoke of the influence of the force of mastication on the deciduous set, of the presence of caries and pulpless teeth. He recommended the filling of the latter with a material that will absorb as the root does. Teeth presenting for treatment of these putrescent conditions should first be relieved of pulp canal contents, then packed with a preparation of formalin and tri-cresol which should be removed in about 48 hours, when the pulp canal filling should be done.* The canals should not be dried thoroughly as some moisture is an advantage as an auxiliary for the remedy, which is composed of Isinglas, 1 dr.; Tannic acid, 1½ grs.; Tricresol, 4 m.; Aqua dis., 1 dr., 30 m., which can probably best be carried to place with a piece of catgut the desired thickness and length which can be left in pulp canals if necessary.

Finally a stiff pellet of zinc phosphate is prepared, placed in cavity and gentle pressure exerted.

Dr. Young, of New York, an orthodontist, agreed with the essayist that the deciduous teeth should be preserved to maintain the space. Cavities should be filled with gutta percha which will all serve to create interstitial development by being compressed between teeth. He deplored the fact that children did not use their dental organs enough. Certain Indian tribes gave such evidence of use of the deciduous set that the cusps had been worn quite flat. These skulls he referred to are on exhibition in the Smithsonian Institute.

Dr. Ottolengui deplored the too common practice of removing the temporary cuspid at times to make way for erupting lateral incisors of the permanent dentition. He called the people who did such work—odontocides.

Dr. Ferris, in conclusion, said that he would much rather extract a tooth that was the cause of an abscess than to allow it to vitiate the secretions. When asked how he would retain space from which temporary teeth had been removed he said to band the tooth before or behind with platinum or gold to which should be soldered a gooseneck wire extension resting against the tooth beyond the space.

THE BOROUGHS.

PRACTICAL HINTS DEPARTMENT.

Edited by G. W. Johnson, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The Dental Review, 55 State street, Chicago, Ill.]

Removing Richmond or Porcelain Crowns:—Use a rubber and corundum wheel that is thin and grind from center of cutting edge down to the root. Then take a large, strong hoe excavator of the obtuse variety and force the porcelain and backing in two. Peel off the band and cap, run a crosswise bur around the pin and the operation is then easily completed.—*C. B. Plattenburg, Chicago.*

Repairing an Amalgam Filling:—To repair an amalgam filling, dry it thoroughly, freshen the surface and using a little soft amalgam at first, build it as you wish being careful to see that the occlusion does not displace it before it sets. If you doubt this just freshen the surfaces of two old fillings and after allowing it to set try and break the joint.—*W. A. Robertson, Crookston, Minn.*

Extracting Deciduous Teeth:—Sometimes the pulp of a deciduous tooth dies before there is any absorption of the root and often these roots are not turned down as rapidly as those containing live pulps. Therefore, if a deciduous tooth is a mechanical obstruction, or if it causes the permanent tooth to go outside or inside the line so as to make an irregularity, it is very much better to take that tooth out and allow the permanent tooth to erupt in its proper place.—*A. W. Harlan, New York.*

Crowns:—The improved Logan crown has been the most popular factory-made crown for many years. If it will continue to be so, is another question. Unfortunately for our patients and for us, many patients must think about their pocketbooks when having their teeth crowned. In such cases, the Logan, when fitted to a strong root with the joint under the gum line and a gutta percha washer used to fill up the defects in the joint, will make a serviceable crown. Moldable porcelain has been suggested as an excellent thing to build up and secure the perfect adaption of a crown of this kind, to the root, and no doubt it is very helpful.—*B. H. Biglow, Rockford, Ill.*

Manipulating Moldable Porcelain:—I believe that the model method is preferable for adjusting the material. There are many accessible cavities that can be kept dry for a reasonable length of time, and it can be done much more rapidly by molding directly to the cavity. In the class of cases where it is indicated, however, I think it is desirable to make a model. You merely prepare the cavity, take an impression and dismiss the patient. If your model is not perfect, the final fitting may be advantageously made in the mouth. The fitting is done directly to the cavity, and the questionable feature of the accuracy of the model is eliminated.—*F. E. Roach, Chicago.*

Prophylaxis:—The deep thinkers of the medical profession admit that if they can bring their prophylaxis to such a degree of perfection as to eliminate disease they will have accomplished their highest mission. If we can follow the same course in the practice of dentistry, we shall be the highest idealists of our time, and that is the *soumnum bonum* of life. The profession anl the public alike must be educated before these higher ideals can be grasped and practiced. This is a hard matter to accomplish because of the apathy which exists in the world, but it is certain to come. It is difficult to break off from old habits. It is well to know that mere mechanics is not the highest attainment so far as dentistry is concerned.—*Alfred Owre, Minneapolis, Minn.*

Narcotile:—I have administered narcotile some two hundred times with almost invariable success, and by success I mean that the anesthesia was perfect—that is, profound enough in 90 per cent of the cases. A few of the remaining 10 per cent woke up before I was through with them. There was no serious disadvantage in that, however, because the patients are in a state of analgesia for quite a time before regaining complete consciousness, during which time I can operate with very little pain, as they afterward admit. I often have trouble with children, in making them take the inhalation. Children are always afraid of the inhaler, and the usual mild coaxing is of no avail. I have adopted the plan lately, with highly satisfactory results, of spraying a piece of cotton with the anesthetic, and applying same to the nose. The analgesia produced is very gratifying.—*W. H. Reaben, M'Comb, Miss.*

Impression For Gold Inlay:—Let us suppose that we have a proximal cavity in a bicuspid, and a molar is adjoining it. I take an impression by bending a piece of metal at right angles, and in that I place the dental manufacturing modeling compound, because it is a low heat material. I press it to place and get an overflow. I then take it out of the cavity, chill with ice water, trim away the overflow, leaving one thirty-second of an inch that is not in contact with the margin, and place it into the cavity again. It will go in like an inlay. I now place a wedge in proximally, and, with pressure on the grinding surface, drop warm water on very slowly until I see it is yielding under the pressure, and then reset it. After chilling it and taking it out I have an impression which is as accurate as an inlay should be with no element of uncertainty as to whether the margins have been distorted or not.—*W. H. Taggart, Chicago.*

Hygienic Conditions As An Aid to Permanency in Dental Operations:—Permanency in dental work largely depends on absolute hygienic conditions and this can not be accomplished unless rigidly enforced. The accumulation of food particles on the lingual surfaces of posterior bridges, without the wearer's knowledge, tends to pathological development subsequently, and many unfavorable reports from patrons follow. To avoid this I invariably advocate a mouth wash as follows: Alcohol, 100 parts; salol, 5 parts; menthol, 1 part. Directions. 15 to 20 drops in a glassful of tepid water, to be used with some good tooth powder and brush after each meal. Patrons should be instructed and the dentist should have an explicit understanding with them and insist on compliance with rules of oral prophylaxis. A little time and inclination on the part of the dentist will soon produce the everlasting friendship of his patron and thus constitute part of his success in practice.—*Bernard Bramm, Chicago.*

Hollow Gold Inlay:—My method of procedure is as follows: I protect the adjoining tooth with Ivory's matrix band, when in close proximity to the adjoining tooth, then with chisels and with convex knife edged carborundum wheel slice off, and with burs form the cavity. This leaves a superficial cavity with margins beveled. The matrix may then be burnished into the cavity with very little trouble and as easily removed. I burnish directly into the tooth without regard to folds, annealing or tearing. It will be noticed that I spend very little time with the matrix, which is never removed from the cavity until it is entirely finished. It is not necessary to imbed a platinum matrix for a gold inlay, but instead paint around the matrix with yellow ochre. This I find is stiffer and adheres better to the platinum than rouge. A small pellet of yellow ochre is placed in the center of the matrix over which the gold flows, giving the desired retaining form to the inlay. In this method I claim that the cavity is more easily and quickly prepared, and with less pain, the matrix is more easily formed and removed, the cavity is better protected and the inlay is so placed in relation to the tooth that the lines of force met with in mastication are directed centrally instead of extrinsically. In making an inlay I always use 22-24 carat gold—never a solder or flux.—*E. L. Hutchinson, Honolulu, H. I.*

MEMORANDA.

ANOTHER DEATH FROM SOMNOFORM.

A patient died at Grand Rapids, Mich., Feb. 22, 1907, after taking Somnoform for the extraction of teeth. She was accompanied by her physician, who administered the anesthetic and who did all in his power to resuscitate her, but without avail.

FIRST AUSTRALIAN DENTAL CONGRESS.

This congress was held at Sydney, Australia, in February, 1907, with Dr. A. Burne as its president. We have not learned particulars of its work, but we shall watch for its proceedings with much interest, as an indication of a new development in dental progress in that quarter of the globe.

GEORGIA STATE DENTAL SOCIETY.

The next annual meeting of the Georgia State Dental Society will be held in Atlanta, May 7, 8, 9 and 10. All ethical practitioners are cordially invited to attend.

D. H. McNeill,
Corresponding Secretary, Athens, Ga.

EASTERN INDIANA DENTAL ASSOCIATION.

The Eastern Indiana Dental Association meets in Anderson, Ind., May

14 and 15. Good clinics. Good papers. Everybody invited. Everybody who comes is a member. Yours truly,

C. W. ORLAND.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held in Chicago, at the Northwestern University Dental School, southeast corner of Lake and Dearborn streets, beginning Monday, June 3, 1907, at 9 a. m.

Applicants must be in possession of the following requirements in order to be eligible to take the examination: (1) Any person who has been engaged in the actual, legal, and lawful practice of dentistry or dental surgery in some other State or country for five consecutive years just prior to application; or (2) is a graduate of and has a diploma from the faculty of a reputable dental college, school, or dental department of a reputable university; or (3) is a graduate of and has a diploma from the faculty of a reputable medical college or medical department of a reputable university, and possess the necessary qualifications required by the board.

Candidates will be furnished with proper blanks and such other information as is necessary on application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The examination fee is twenty ($20) dollars, with the additional fee of five ($5) for a license.

Address all communications to J. G. Reid, D. D. S., Secretary, 1204 Trude building, 67 Wabash avenue, Chicago, Ill.

ILLINOIS STATE DENTAL SOCIETY.

The forty-third annual meeting of the Illinois State Dental Society will be held at Quincy on Tuesday, Wednesday, Thursday and Friday, May 14, 15, 16 and 17, 1907.

ARTHUR D. BLACK,
Secretary, 31 Washington Street, Chicago.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

The thirty-ninth annual meeting will be held at Albany, May 10 and 11, 1907. A most interesting program has been prepared, and a cordial invitation is extended to all reputable practitioners to attend the sessions.

W. A. WHITE, President.

CHARLES S. BUTLER, Secretary.

TEXAS STATE DENTAL ASSOCIATION.

The Texas State Dental Association holds its meeting this year in the city of San Antonio, June 13, 14 and 15.

It is our effort to give our brethren a most delightful and interesting time and should be glad to see as many as possible with us.

G. W. STAPLES, Secretary.

INDIANA STATE DENTAL ASSOCIATION.

The forty-ninth annual meeting of the Indiana State Dental Association will be held at the Claypool hotel, Indianapolis, June 11, 12, 13, 1907. The executive committee has arranged an unusually interesting program for this meeting. A cordial invitation is extended to the profession to be present.

CARL D. LUCAS,
Secretary, Indianapolis.

ALABAMA DENTAL ASSOCIATION.

The next annual meeting of the Alabama Dental Association will be held in Birmingham, May 14 to 17, 1907. Reduced rates on all railroads on certificate plan.

All ethical dentists and physicians invited to attend.

F. A. JOHNSTON, D. D. S.,
Secretary, Sheffield, Alabama.

MISSISSIPPI DENTAL ASSOCIATION.

The fourteenth annual meeting of the Mississippi Dental Association will meet at the county court house in Meridian May 28, 29, 30. All ethical practitioners of this and other states are cordially invited to attend.

Reduced railroad rates and reduced hotel accommodations will be secured.

For full particulars address E. Douglas Hood, Secretary Mississippi Dental Association, Tupelo, Miss.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next meeting for examination at Iowa City, June 6, 7, 8, 10, 11, 1907.

To be eligible to this examination the applicant must hold a diploma from a college that is on the accredited list of the National Association of Dental Examiners.

Applicant must state where he attended first, second and third year of college.

Address all communications to E. D. Brower, D. D. S., Secretary, Le Mars, Iowa.

ALUMNI CLINIC OF THE ST. LOUIS DENTAL COLLEGE.

The Alumni Association of the St. Louis Dental College (formerly Marion-Sims) wish to announce that their annual clinic will be held at the college building, Grand avenue and Caroline street, on Tuesday and Wednesday, May 7 and 8, 1907.

All ethical members of the profession are cordially invited to come and enjoy the festival of good things being prepared, and every member of the alumni is especially requested to show his allegiance to the association by his presence. Respectfully,

JOHN BERNARD O'BRIEN,
W. L. O'NEILL,
Committee on Publicity.

ANNOUNCEMENT OF N. D. A. CLINIC.

The work of arranging the clinical operations, table clinics, etc., for the coming N. D. A. meeting is progressing. I had hopes that I might at this time publish the names of the district and state chairmen, but that is impossible. The fearful floods and the great amount of snow which have fallen have prevented the usual mail facilities. It must be this, for the letters sent December 20, 1906, in many cases still remain unanswered.

Plans have been made which, if followed, should result in bringing to the meeting men from all of the states in the Union and Canada.

As soon as possible each state will be provided with a local chairman, who will make every effort to obtain such an array of talent that the clinic of the National Dental Association, which is to be held at Minneapolis on July 31 and August 1 will be the best ever arranged for the consideration of the members.

The work of the clinic has been divided.

Dr. W. N. Murray, Medical block, Minneapolis, has been appointed chairman of the inlay section. Dr. Murray is arranging special features for his department.

Dr. W. R. Clack, of Clear Lake, Iowa, the secretary of the clinic section, has the territory west of the Mississippi river entirely under his jurisdiction.

I have the rest of the United States and eastern Canada under my care.

The executive council has invited the members and friends of the Black Club to operate on one of the days of the clinic. The invitation will be extended to them and beyond a doubt it will be accepted.

The fact that I have been chosen chairman of the clinic section does not mean that the clinic is to be a Black Club clinic. It simply means this—that I hereby extend a most cordial invitation to all reputable dentists in the United States and Canada to come, meet with us, and if you have anything new to introduce in methods of filling teeth or some new appliance you wish to demonstrate at a table clinic, come to us and be welcome. Every chance will be given all to assist in making this a most memorable clinic. (I am not in position to invite to the clinic those who have patented instruments or methods to sell; their place is the exhibit room.)

I would like every man who has anything which he feels is of value to others to know, that if he will come and demonstrate it, there is room on the program and at the meeting for him.

I am depending upon the district and state chairmen to assist me. One man may do much, but many men who are willing to work and do work are able to do much more. I am bending every energy to make this clinic the best which the National has ever held. More no man is able to do.

The dental journals for July will contain the clinical program.

Those who wish their names to appear as operators or table clinicians must have them in my hands by June 1.

On July 1 the N. D. A. program goes to the printer.

E. K. WEDELSTAEDT,
Chairman Clinic Section, New York Life Building, St. Paul, Minn.
February 14, 1907.

PATENTS RECENTLY GRANTED OF INTEREST TO DENTISTS.

841,946.	Toothbrush, Fred Downing, Decatur, Ill.
841,962.	Dental flask-press, James F. Hardy, New York, N. Y.
842,112.	Dental plugger, Safford G. Perry, New York, N. Y.
842,357.	Filling teeth, Hamilton F. Strong, Cleveland, Ohio.
843,273.	Dental bur and excavator, Willy Homann, Dusseldorf, Germany.
844,079.	Dental matrix, Ellsworth Armstrong, Collingdale, Pa.
844,181.	Dental floss holder, Charles M. Overbaugh, Clarion, Iowa.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

LISTERINE

**The best antiseptic for
a dentist's prescription**

1881+25=1906

A fourth of a century of continued, satisfactory employment of Listerine has demonstrated to many practitioners that Listerine is the best antiseptic to prescribe for daily use by the patient in the care and preservation of the teeth. The mild, stimulating effect of the free boric acid radical in Listerine is of the highest importance in maintaining a healthy equilibrium of the fluids of the oral cavity. At best, alkalies simply temporarily neutralize the acid-forming ferments which the carbohydrates of food produce in the mouth,—a true antiseptic prevents that fermentative change.

Literature will be forwarded upon request, containing a brief résumé of recent bacteriological investigations supporting the above argument.

Lambert Pharmacal Co.

St. Louis, U. S. A.

STILL SOMETHING NEW

THE VERY LATEST IS

PLASTIC MAT GOLD

In Cylinder Form

We claim to be the first to make this gold, in 1875. We were before the time and did not catch on to putting it into proper form. We now make it into cylinder form ½ to 1½.

This is a very dense gold and for rapid work it has no equal. It is also valuable in covering amalgam fillings while the amalgam is soft.

PRICE

1-8 Oz., $4.50 1-2 Oz., $17.00 1 Oz., $34.00

We have also put

CRYSTALLIZED FIBER GOLD

INTO CYLINDER FORM

and it is meeting with great favor. Sizes

PRICES

1-40 Oz., $1.00 1-8 Oz., $4.00 1-2 Oz., $15.00
1 Ounce, $29.00

JOHN HOOD COMPANY

178 Tremont Street
BOSTON

ESTABLISHED BY HOOD BROS. IN 1865

For Your Patients

We now introduce a floss silk **Designed Particularly for Toilet use.**—

Lister Dental Floss in glass

(Antiseptic Medication)

Thoroughly impregnated with efficient antiseptics combined with delicate flavoring that disinfect and deodorize the spaces between the teeth in removing particles of decomposed food, and impart a pleasing taste and sense of cleanliness to the mouth.

This floss is a flattened thread with corrugated surface the same as our New Era Floss and put up in the same form. An aseptic glass container with cutting device. It differs from New Era Floss in that it is medicated and flavored.

A beautiful and useful souvenir for the patient, or it may be sold with profit.

15c. Each. Doz. $1.50 Gro. $15.00.

Another New Article just ready is

Aseptic Japanese Bibulous Paper J & J

Through a thorough process of sterilization this paper is rendered surgically clean and suitable for dental and surgical use.

Put up in sealed aseptic package 250 sheets $10\frac{3}{4}$ x $3\frac{3}{4}$ 25

Sold by leading Dealers in Dental Supplies in every country in the world.
Specify Johnson & Johnson

JOHNSON & JOHNSON,
New Brunswick, N. J., U. S. A.

PATENTS

⁂

CAVEATS,
TRADE MARKS,
DESIGN PATENTS,
COPYRIGHTS,
ETC.

⁂

CORRESPONDENCE SOLICITED

JOHN A. SAUL

FENDALL BUILDING
WASHINGTON, D. C.

PYORRHEA

Owing to the value of Sal Hepatica in the treatment of diseases of the uric acid diathesis it has been found specially beneficial in pyorrhea alveolaris, a malady in which rheumatism and gout are potent causes. It contains the salts similar to the celebrated Bitter Waters of Europe, fortified by addition of Lithia and Sodium Phosphate. It stimulates liver, tones intestinal glands purifies alimentary tract, improves digestion, assimilation and metabolism.

Write for free samples.

BRISTOL-MYERS CO.
BROOKLYN-NEW YORK

TO THE DENTAL PROFESSION

PHILADELPHIA, Feb. 1st, 1907

On and after this date the following prices will be in effect for Teeth of our manufacture:

PRICES

		Retail	$25 00 Lots	$50.00 Lots	$100.00 Lots
Plain Rubber		$0.23	$0.21	$0.20	$0.19
Plain Plate					
Celluloid					
Gum Sections		.24	.23	.22	.20
Gum Rubber, Single					
Gum Plate					
Flat Back, Long Pins, Plain		.28	.26	.25	.23
Allen's Continuous Gum					
Flat Back, Long Pins, Gum					
Plain Rubber and Plate	HAND STAINED	.33	.32	.31	.29
Gum " " "		.34	.33	.32	.30
Flat Back, Long Pins, Plain	HAND STAINED	.38	.36	.35	.33
" " " " Gum					
Allen's Continuous Gum					
Diatorics (not in Combination Sets)		.10	.07½	.07	.06½
Combination Sets of 14s		1.78	1.62	1.54	1.46
" " " 28s		3.56	3.24	3.08	2.92

NICOLETTES

	Retail	$25 00 Lots	$50.00 Lots	$100.00 Lots
Partial Sets and Single Teeth	.10	.07½	.07	.06½
Per set 14s	1.12	1.05	.98	.91
" " 28s	2.24	2.10	1.96	1.82
Miscellaneous Nicolette Teeth, 200 in box, well assorted, in equal quantities of Centrals, Laterals, Canines, Bicuspids, and Molars, Rights and Lefts	12.00	11.00	10.00	8.00
Special Assortments These odd teeth are not exchangeable	13.00	12.00	11.00	9.00

DETACHABLE PIN CROWNS

	Retail	$25 00 Lots	$50.00 Lots	$100.00 Lots
Crowns, complete	.40	.37	.34	.31
" separate	.25	.23	.21	.19
Pins "	.15	.14	.13	.12
" Split "	.20	.19	.18	.16
Iridio Platinum Pins	1.00			
100 crowns, complete in neat hardwood case	35.00			
Miniature Sets	.60			
Cavities drilled in teeth	.25			

The quantity rates may be made up of one class of teeth or mixed lots of any or all classes.

The retail prices, as well as the quantity rates are subject to our regular discount for spot cash, according to amount, as follows:

On amounts from $ 5.00 to $ 25.00...... 3%
25.00 to 100.00...... 5%
100.00 and over.......10%

H. D. JUSTI & SON
PHILADELPHIA CHICAGO

DENTAL REVIEW.

VOL. XXI. CHICAGO, MAY, 1907. No. 5

REPORT OF TABLE CLINIC WITH THE MANUDYNAMOMETER.*

BY G. V. BLACK, M. D., D. D. S., SC. D., LL. D., CHICAGO, ILL.

I wish to report the results of this clinic as a preface to my paper to show what men are able to do in pounds stress by hand pressure in excavating cavities with the ordinary cutting instruments, or with pluggers.

Seventy-five persons made trials of their finger power on the manudynamometer, which is nothing more than a specially built spring scale arranged to record automatically the pounds pressure of each of any number of thrusts made in succession. Of these the lowest record with the pen grasp was seven pounds; the highest was twenty-seven pounds, a difference of twenty pounds. The range was: One person, 7 pounds; six, 8 pounds; eight, 10 pounds; two, 11 pounds; fourteen, 12 pounds; eighteen, 14 pounds; eight, 15 pounds; seven, 16 pounds; four, 18 pounds; five, 20 pounds; one, 25 pounds; and one 27 pounds.

The general average of the seventy-five persons foots up 13.8 pounds. This average is a little lower than I have generally obtained at such meetings, for they have usually been as high as fifteen pounds, occasionally running over sixteen. The higher records have quite generally been made by the older men who learned the use of hand pressure before the use of the mallet and the burring engine became general. There are very few of these here today and within a few years there will be none left. Not so many men are developing strong finger power since the engine is so generally used, for the reason that they do not practice it to the same extent. This is a distinct loss in several directions. Many things can be easier done, quicker done, better done, and done with less discomfort to the patient, with strong finger power and cutting instruments, than with the rotary instruments. Strong finger power also develops greater delicacy in operating.

---

*Read before the G. V. Black Club, St. Paul, February 27, 1907.

Soon after I had built this manudynamometer, I made the effort to obtain the record of the finger power of every noted operator I could reach whose reputation seemed to be based on his manipulative ability. I found all of these much above the general average. I studied the instrument grasp used by these men and found it surprisingly uniform. I remember well my first record of the finger power of Dr. McKellopps of St. Louis. He took the instrument up, grasping it with the balls of the thumb and first and second fingers, and made thrust after thrust across the whole page of the register with the most perfect regularity of force, each thrust measuring even thirty-five pounds. This was done without any apparent over-effort or strain for an unusual exhibit of force.

The man who can readily use twenty pounds' force with the pen grasp can do things in the mouth that are impossible to the man who is limited to ten or twelve pounds, and all of his work is more certain. His manipulation is also more delicate where that is the requirement, in proportion to his power and control over his instrument. It is clearly the duty of every dentist to develop this power by careful and considerate practice. One of the first steps toward this is to become accustomed to the use of a correct instrument grasp. For the development of force, the instrument should be grasped between the balls of the thumb and the first two fingers. All three should close upon the instrument and the shaft should cross the first finger between the second and third joint. This gives at once the greatest possible power of the joint action of the two fingers opposed by the thumb and the greatest freedom of motion. Care as to the grasp and care in daily practice will increase the available pounds pressure within a few months to a degree that will amply repay the effort. This will remain permanent so long as care as to grasp is maintained in practice.

In taking these records yesterday I noticed many calluses on the side of the second finger near the first joint or between the first and second joints, where a grasp has been used in which the instrument crosses that finger at these points. In this case the real holding power is confined to the first finger and thumb, and the power developed will be fully one-third lower than it should be.

THE NATURE OF BLOWS AND THE RELATION OF SIZE OF PLUGGER POINTS TO FORCE AS USED IN FILLING TEETH.*

BY G. V. BLACK, M. D., D. D. S., SC. D., LL. D., CHICAGO, ILL.

I recognized many years ago that we as dentists needed to know more of the physics of percussion, or of blows of the mallet. We have had no source from which to draw the desired information. In the 70s Dr. George H. Cushing endeavored to study this subject in a scientific and practical way. He consulted books on physics and the best known physicists he could reach and found no information. He endeavored to construct apparatus that would give information, but was disappointed in the results. I have found the condition in the literature the same. Physicists know the force of blows in foot pounds, foot tons or the various forms and degrees of motion produced in the object struck, and can tell all about it that is worth knowing apparently from these standpoints. But when asked about the pressure between two billiard balls at the instant of contact, they know nothing about it. They can tell us all about impact in its effects in the development of motion or work. Many seem to think there is no such question as the force or stress of impact other than that measured in foot pounds, or in motion. This does not answer the question we are seeking to understand. The Irishman had the idea we are seeking. He had fallen from a building on which he was working and was seriously hurt. His employer visited him and was condoling with him regarding his injury from the fall. Pat said, "Sure, sir, and it wasn't the fall that hurted me; it was the shthopen so quick."

---

*Read at the meeting of the G. V. Black Dental Club, St. Paul, February 27, 1907.

It is the stopping of the motion of the mallet, the blow, or the pressure between the mallet and the thing struck, that interests us. It is not the motion imparted to the body struck. There are beautiful studies (and they are perfectly correct physics from the standpoint taken) with swinging billiard balls, in which the motion imparted to one ball by being struck by another can be very accurately measured by the oscillation of the ball struck. But it gives us no information regarding the stress between the balls at the instant of contact. The Ballistic pendulum affords a fine opportunity to study the force exerted by rifle balls, but this again is registered in motion produced in the pendulum and has nothing to do with the pressure between the rifle ball and the weight forming the pendulum at the instant of contact.

On the other hand a friend of mine who delves in science, wondered the other day at an experiment he tried. While out trying a 22-caliber modern high-power rifle, he happened upon a child's house-building block, about two inches square and a quarter inch thick, made of some very light wood. He set it on a gate-post and stepped off a short distance and fired at it. The effect apparent at the moment was to move the block slightly, but it remained standing on edge on the post, and he supposed that he had missed it. Upon examination, however, he found a hole through it near its center. To the tremendous momentum of the rifle ball the cutting of the hole through the block was scarcely a feather's weight in retardation, and that was all that was left to disturb the inertia of the block. The ball cut the hole without communicating more than this in motion.

One time I was watching a man handling a pile-driver, setting very long logs into loose sand. These long piles when raised on end and let go, would sink eighteen or twenty feet into the sand by their own weight. It happened that in letting down his steam hammer to drive one of these, he let it fall some twenty feet with its accompanying steam cylinder. The effect of this tremendous blow was not to drive the pile deep into the sand, but the whole of the upper half of the pile was broken into thousands of splinters. The force of the blow was spent in destroying the log instead of driving it into the sand. *A blow is in the nature of an explosion in which* *all the force generated by weight and velocity is discharged in an instant of time.*

So much for the purpose of impressing upon your minds the fact that little or nothing is known of the pressure between a hammer and the nail that is being driven, and the further fact that this is something entirely different from foot pounds or the motion imparted to one body when struck by another. *A blow is the sum of all of this concentrated in an instant of time.*

We, in filling teeth, depend upon the force of the blow at the moment of contact. We see from all of this that blows in order to produce the results desired must be carefully fitted to the conditions and the work to be done. They must not be too strong, nor must they be too light, or they will fail to fulfill the purpose intended. If velocity forms too great a proportion of the momentum, they will simply destroy; if the momentum as a whole is too small, they will fail to accomplish their purpose. In each case the area of the plugger point must be fitted to the pounds pressure of the blow. The instrument we use communicates the accumulated force of the mallet, less the retarding power of its own weight, to the condensation of the gold, and it is the stress between the instrument point and the gold, that we employ. This I wish to illustrate. For this purpose I have brought several pieces of apparatus. Among them are a number of instruments with circular points that have been turned to nearly the size desired, then hardened and tempered to a very light yellow—just a shade—and afterward ground exactly to the measured size. The end is ground perfectly square so that the edges are sharp. The effort has been to get these exactly perfect. (Fig. 1 and Fig. 2.) For the use of these I have a thrust dynamometer to measure the force of thrusts (Fig. 3) and a falling weight apparatus for delivering a variety of uniform blows. (Fig. 4 and Fig. 5.)

I will take one of these instruments, measuring 2½ mm. in diameter, place it in the falling weight apparatus, and let a mallet that weighs two-tenths of a pound, approximately 3 ounces, fall 33.5 inches or 85 centimeters and strike the instrument. Under the instrument I will place a polished block of box-wood, the fibre of which is on end, and over this a piece of hard cardboard 1/100 of an inch thick. You will notice that the effect of the blow is to cut a clean hole through the cardboard and bury the piece cut out exactly level

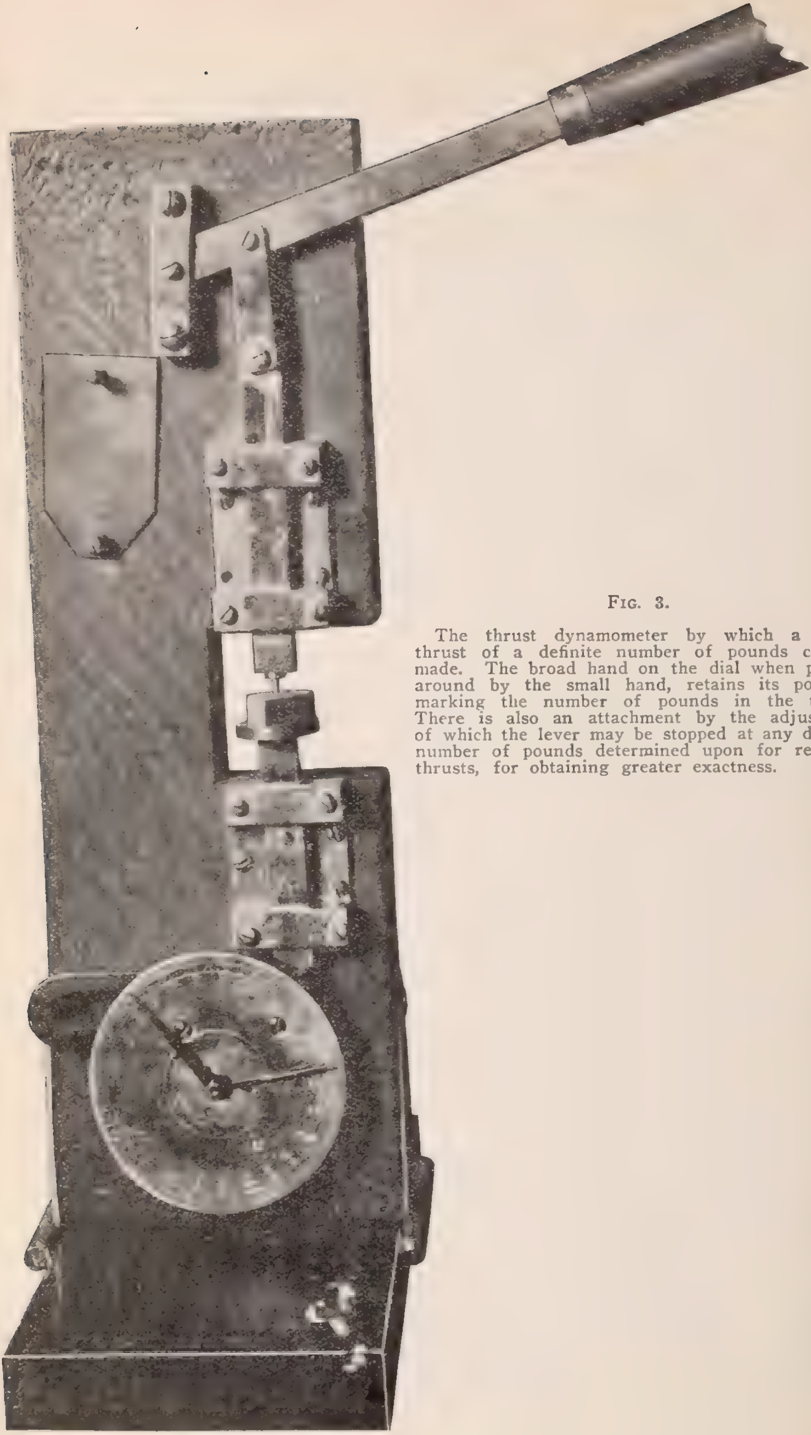


Fig. 3.

The thrust dynamometer by which a quick thrust of a definite number of pounds can be made. The broad hand on the dial when pushed around by the small hand, retains its position, marking the number of pounds in the thrust. There is also an attachment by the adjustment of which the lever may be stopped at any definite number of pounds determined upon for repeated thrusts, for obtaining greater exactness.

with the surface of the wood, implanting it into the wood. This blow reckoned in foot pounds would generate a force of a little over five-tenths of a foot pound, when the result is spread over the time of one second. Now I will transfer this block and the paper to the thrust-dynamometer and we will measure the pressure required to produce a similar result with a precisely similar point. You will see that the 235 pounds, which is the full register of this instrument, cuts a clean hole through the paper but does not bury the paper quite fully into the wood, as was done by the blow. To do this requires full 250 pounds.

Now let us place an instrument that is 2 mm. in diameter in the falling weight apparatus and let the weight (two-tenths pounds) fall from a height of 44.8 cm (1 ft. 5½ in.) under the same conditions, and we will see that this also cuts a smooth round hole through the paper and buries it into the wood just to the level with its surface. Now we will try this with an exactly similar instrument point in the thrust dynamometer. The effort shows that it required 160 pounds pressure to cut this through and bury the paper to a level with the surface of the wood. The difference between the two instruments, one two mm. in diameter, and the other 2½ mm. in diameter, makes this difference in the pressure required to do what appears to be similar work, and it is exactly in accord with the difference in the area of the two points. The one two mm. in diameter has an area of 3.141 sq. mm.; the one 2½ mm. in diameter has an area of 4.908 sq. mm.; .0196 sq. mm. of the area of this wood block will sustain one pound in pressing the paper into the block to a level with its surface.

This may perhaps be considered a crude experiment. It is intended particularly to show the difference between pounds pressure discharged by a blow at the instant of contact and foot pounds, or the motion produced in the thing struck. Or it is a comparison between the work done by a blow and the work done by a weighed thrust. Physicists have generally regarded the measuring of this pressure at the instant of contact as practically impossible, because of its very short duration. All, however, realize in speaking of the subject, that time is required, though it is very short. This may be measured in various ways, and instruments can be built that will measure it very accurately. Today it is not impossible to construct

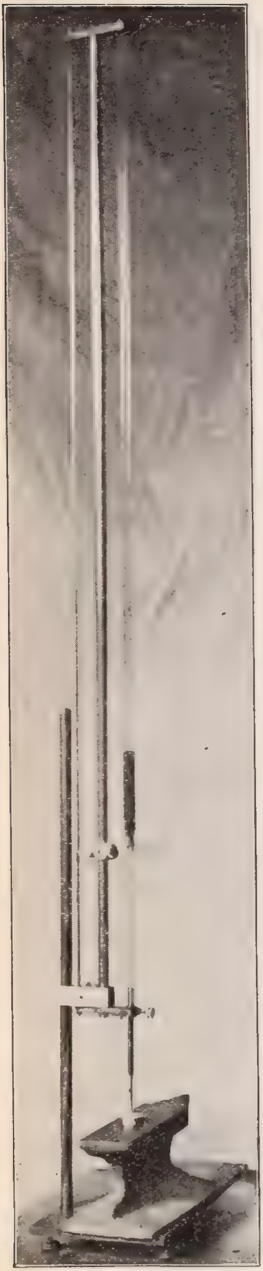


Fig. 4

FIG. 4.

Falling weight apparatus full length; showing anvil with brass block, an instrument in the instrument sleeve and the mallet on the tripping table above. Observe carefully that the mallet has guide wires to confine it in its definite line of fall (seen best in Fig. 2). The principal rod is 42 inches long and can be raised or lowered on its stand 20 inches. It has three scales: (1) Millimeters and centimeters, (2) inches and tenth inches, (3) feet and hundredths of feet.

FIG. 5.

An enlarged view of the more essential parts of Fig. 1, showing the mechanism more definitely. The cord by which the tripping table is tripped is definitely seen in this. This table is fixed on the rod by a thumb screw (which is hidden in this view) by which it may be placed at any height within the length of the rod. When the tripping table is released by a slight pull on the cord, it is snapped from under the weight (mallet) very suddenly by a coiled spring, giving the weight a perfectly clear fall. The stand has a leveling arrangement by which the guide wires can be brought exactly perpendicular.

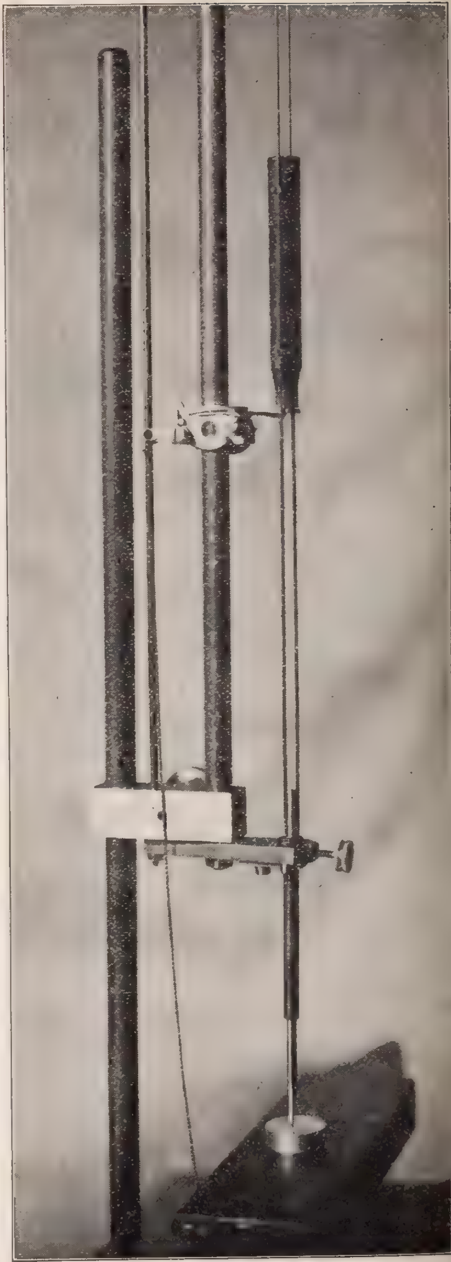


Fig. 5

an apparatus that will measure time to the one-ten-thousandth of a second and apply it to such measurements. It is only a question of time when every fact connected with the force of blows may be accurately known, but to determine these facts will require some of the most delicate apparatus. I bring this piece of apparatus and this plan of showing this before you because it appeals particularly to the eye, and you will understand this very much better than you would understand results detailed in figures obtained from more accurate instruments. I can measure the depression in brass or other metals caused by the stroke of an instrument such as we have seen here, and obtain its depth in microns or in ten-thousandths of an inch. This of course gives very much more accurate results than striking an instrument into the best wood, but even in this there is a considerable error, or portion that remains unmeasured from the fact that there is a return after the stroke, or an elasticity of the metal that can not be overlooked; this, however, can be seen in the rebound of the mallet, and in part measured. But this feature of the measurement of blows was not my subject, and it is only mentioned incidentally, not with any view of following out the scientific plans on which these facts will eventually be determined. So far as the main facts are concerned under which we must work, these instruments declare them with sufficient accuracy to guide us in the selection of instrument points.

We will now make a series of experiments including smaller instruments, running them along together until we can determine the relationship of the size of these to the number of pounds required to produce a certain result. In this the table given below is followed, and a study of it will give a good deal of exact information. The proportions remain constant for any wood, brass, babbitt metal or other blocks, only that the pounds force differs in proportion to the softness or hardness of the substance used.

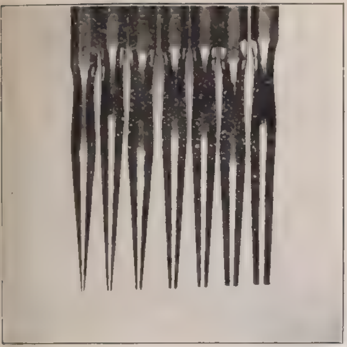
Both inches and centimeters height is given for the heaviest mallet, which is approximately two-tenths of a pound.

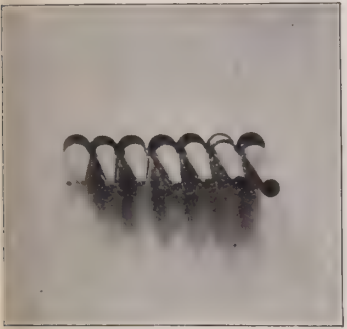
In all of this the character of the resistance must not be overlooked, for in considering the force of blows the resistance is an essential element, though I shall not undertake to give it in the table which I present. But this must be remembered with the same care as the momentum of the mallet. I will make an experiment

TABLE SHOWING DIAMETER AND AREA OF POINTS, POUNDS AND KILOGRAMS STRESS BY FALL OF MALLETS OF GIVEN WEIGHTS FALLING FROM GIVEN HEIGHTS.

				HEIGHT OF FALL OF MALLETS.				
				Weight, 93.270 grams.		Weight, 62.216 grams.	Weight, 31.098 grams.	Weight, 15.554 grams.
Diam., mm.	Area.	Pounds.	Kilograms.	Inches.	Centimeters.	Centimeters.	Centimeters.	Centimeters.
.5	.1963	10.	4.536	1.4	3.4	5.08	10.20	20.32
.75	.4417	22.5	10.205	3.00	7.64	11.44	22.88	45.75
1.00	.7854	40.	18.14	5.35	13.60	20.38	40.78	81.03
1.25	1.227	62.5	34.00	8.38	21.25	31.85	63.75	127.4
1.5	1.767	90.	40.82	12.00	30.58	46.29	92.61	185.2
2.0	3.141	160.	72.58	21.4	54.4	81.55	163.12	326.2
2.5	4.908	250.	113.4	33.56	85.	127.2	254.6	509.0

demonstrating this. I will use the same piece of boxwood and the same cardboard and place the instrument the same in every particular as in the last experiment, except that I will place under the boxwood a thin piece of cork. Now I will let the two-tenths pound weight fall from 44.8 cm. height on the 2 mm. point, the same height at which it cuts the paper and implants even with the surface of the wood without the cork. You will see that it does not cut through. I raise the weight 10 cm. higher; still you see it does not cut through. I raise the weight 20 cm. higher; and then it does not cut through. I double the original height and find it cuts through, but does not bury the paper in the wood. The blow to do this registers 160 pounds without the cork under it. This difference is because the lessened resistance increases the time of the stopping of the motion of the instrument, or slows down the discharge of the momentum; just as that time is increased by a substance which gives way, so will the pounds force of the blow be diminished. This is just as important for us to know and to become able to judge of in practice as it is to know the force of the blow on a solid. It is part of the relation between the momentum and the pounds force of the blow, and would be calculated by the rules for retarded motion if we had the measurement. Just as it is difficult to drive a nail through a board held in the hand, so the force of the blow is dissipated by the movement of the board. Therefore the movement of the thing struck has an influence upon the force of the blow given, thinning out the discharge of force. This is continually changing the force of blows used in our practical





Figs. 1 and 2.

The instrument points used photographed natural sizes to show the gradation of size. Fig. 1 is a side view and Fig. 2 is an end view.

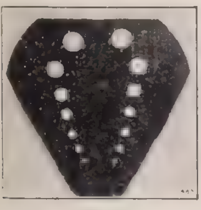


Fig. 6.

A box-wood block in which cardboard has been implanted; those on the left by the thrust dynamometer and those on the right by the falling weights, in accordance with the table given below. The measurements of the diameter in millimeters and the stress in pounds in implanting each one as follows, reading each side from the top downward: 2.5 mm. — 250 lbs., 2. mm. — 160 lbs., 1.5 mm. — 00 lbs., 1.25 mm. — 62.5 lbs., 1. mm. — 40 lbs., .75 mm. — 22.5 lbs., .5 mm. — 10 lbs.

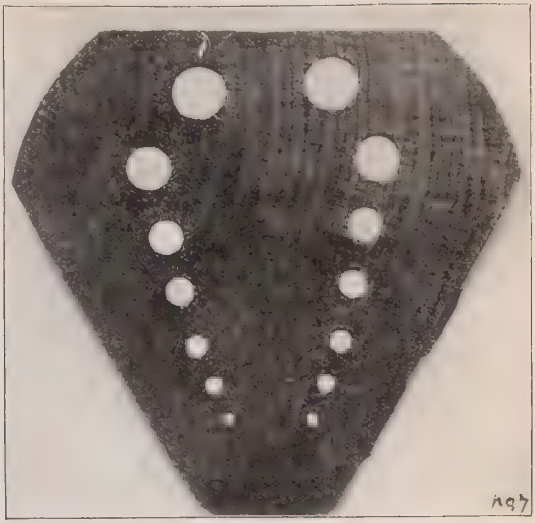


Fig. 7.

An enlarged picture of Fig. 6.

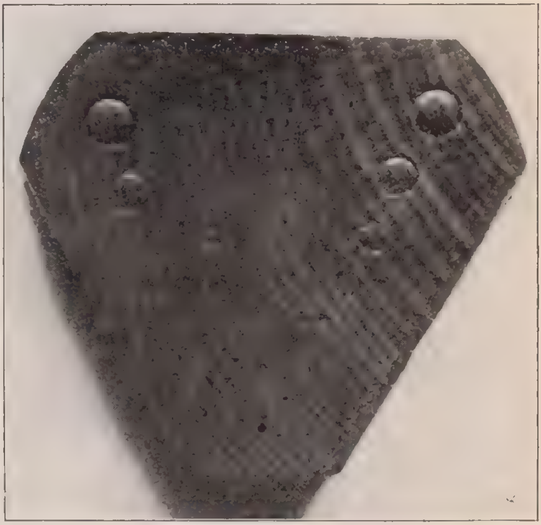


Fig. 8.

An enlarged view of a block of box-wood, the left side of which received thrusts from the dynamometer and the right side strokes from the falling weights, according to the table given below. The rounding up of the bruised wood in the bottoms of the punctures made by the springing back of the wood is well seen in the prints of the larger instruments. The picture does not show depth very well.

operations in filling teeth. Some teeth have very thin peridental membranes in which the teeth give way very slightly. Others have thick peridental membranes, and though the teeth and their membranes may be strong, they have much more motion in their sockets and give more to the blow, reducing its pounds force. On this particular point there is a very delicate test that every dentist should learn. It is that which A. M. Leslie before the war in an article dealing indirectly with this subject, spoke of as the "anvil-tone" given out by the mallet when gold is struck, which will always occur when the gold is condensed, and must be moved after it is fully condensed, if it moves at all. Those of us who will learn to recognize that tone coming from the mallet, will have a guide that will be valuable in determining the condensation of gold. We may have a second tone. We may recognize a tone which represents solidity

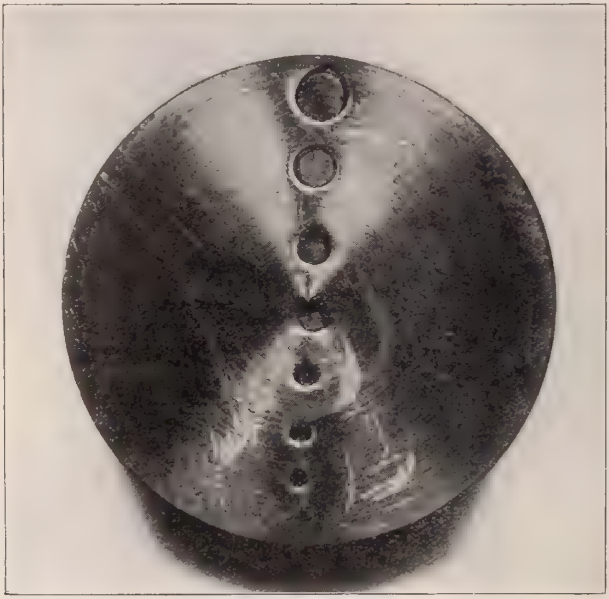


FIG. 9.

A brass block (enlarged) in which the seven instrument points have been struck, all with the two-tenths pound mallet, falling 33.56 inches. The progressive increase in depth reading from the larger to the smaller is only moderately well shown. The depth is .14 millimeters for the largest instrument, grading down to 1.25 millimeters for the smallest.

while the gold is perfectly welded and yet soft, as annealed gold, and a different tone that will be given out when the gold has been hammered until it is hard like hard hammered gold.

An area of gold that in its condensation will require fifteen pounds stress, is not more than .785 sq. mm., or the area of a plugger that is 1 mm. in diameter. You will see by the table which I have given that this instrument 1 mm. in diameter requires 40 pounds to bury the cardboard to a level with the surface of the block. The sizes of the points are given in the table and the pounds force developed by four mallets, each of specified weight, each falling from a specified height for each instrument. Notice particularly that when the diameter of the instrument point is doubled, the pounds force required is four times as great. This is seen in the table in the difference between the pounds force for the five-tenths millimeter point and the one millimeter point; between the three-fourths millimeter point and the one and one-half millimeter point; between the one millimeter point and the two millimeter point; and again between the one and one-quarter millimeter point and the two and one-half millimeter point. Any intermediate sizes are in the same proportionate relation. This exhibits the law of the relation of the size of plugger points to the force used, and there can be no question as to its correctness.

With this before us clearly and fully appreciated, one should not go far astray in the selection of plugger points. Each man should know precisely how many pounds he can use with the pen grasp in filling teeth. It has been found by experiment that less than fifteen pounds on the area of a plugger point 1 mm. in diameter, can not be used successfully in condensing gold, and this is generally—that is, for most men—too large for hand pressure work. My observation with the manudynamometer shows clearly that the man of average finger power can not use more than this regularly in his every day work, though some can use more. Anything more than that in the size of the plugger point will inevitably produce a filling that will be imperfectly condensed unless the conditions are such that the additional pressure can be used. If we use too much pressure, we will be chopping up our gold instead of condensing it. I may illustrate this by dropping a weight from too great a height upon a brass block. The 1.5 mm. point will bury the paper rather deeply falling three feet. With the same fall the 1 mm. point cuts deeply into the brass. You will now see that the instrument point has been driven into the solid metal so that I can swing the block about on the instrument point. We are limited to a very narrow range in sizes of plugger points. In practice the area of the plugger points should vary between that of ½ mm. in diameter and 1 mm. in diameter. The form may be anything desired. The smallest of these points should be used only by hand pressure in some particular places; occasionally in the starting of fillings in very small convenience points; or some out-of-the-way place, in which we will necessarily use hand pressure. The points for general use should vary between the area .75 mm. and 1 mm. in diameter, and should be confined quite strictly to that variation of size no matter what their form may be. If we must use a foot plugger to reach in between proximal surfaces, it should be so narrow that we will not use more than this area of the toe of the plugger in condensing gold.

There are several young ladies here who have had long training in malleting gold in making fillings, and I have asked them to bring their mallets to assist me in this demonstration. First I will place the ½ mm. point on the paper over the same boxwood block used in the former experiments, and request one of them to strike it as nearly as possible as she would do in condensing gold. (Twirling the block on the instrument.) Now you see that her blow has sent the point through the paper and deep into the wood. We will next try the ¾ mm. point. This has cut the paper and driven it slightly into the wood. It is just about a 25-pound blow. Now we will try the one millimeter point ,which requires forty pounds to cut through the cardboard. The blow fails to cut through. Try again and strike very hard; again it fails. The third time the paper is cut and the effort is seen to be much in excess of the usual blow in filling teeth.

Another tried the same line of experiments with similar results.

Now a point 1½ mm. in diameter, requiring a 90-pound blow was tried. Two of the girls failed after repeated efforts to cut the paper. The third succeeded in cutting the cardboard, but failed to implant it in the wood. Such blows of course would not be used in the mouth.

My desire in bringing this before you is to call your attention strongly to the facts regarding the relation of the size of points to the force used. One of the errors I have noticed with men in filling teeth is that if their case is a favorable one where they feel that they can use large pellets or blocks or cylinders of gold in building the filling, they almost invariably select a arger pugger point—exactly the thing they should not do, for if they have a greater thickness of gold, they should rather have a smaller plugger point than a larger one. Unless we can increase the pressure as we increase the amount of gold under the instrument point, we will inevitably make a loose, imperfect filling. Closer attention to this should be given by a very large proportion of the men in dental practice. It is true that we may use lighter blows if we spread our gold in very thin layers or if we lay on flat sheets of foil and have a very small amount between the plugger point and the gold already condensed. In this case we can not use a much larger plugger point safely, but we may use less force, but we must not use so great a force as to pit the gold deeply. If on this brass block I use a force considerably in excess of that required to cut through the paper 1/100 inch in thickness, I will inevitably drive my plugger point deep into the brass, as I have shown, and instead of condensing will simply chop the metal. Both of these things are continually being done by dentists, and their intention is being defeated because of their failure to select plugger points wisely as to area of condensing surface. If there is anything that arouses my ire quicker than another, it is to see a dentist working carefully in making a filling, and when he comes to the final condensation of the surface of the gold, take a broad foot plugger and go hammering away over that surface. If the surface needs condensing it should be done with such a plugger as will condense, not one that is so broad as to weaken the stress until it will not condense, not one too small that will chop into the gold. It is a good rule to have no plugger point in the instrument case with an area of more than 1 sq. mm.

There is another point of very considerable importance directly in this connection, though it might appear to some to be a side issue, and that is the fitting of the gold perfectly to the walls and margins of the cavity. To do this it is necessary that we wedge the gold between the gold previously condensed and the walls of the cavity. In every instance in laying gold against a margin, remember that it is impossible to fit gold perfectly against a wall by driving directly against that wall. It must be a lateral pressure against the gold previously condensed, in sufficient bulk to hold the last firmly. We may condense a very small amount of gold into an angle safely, but it is only into an angle that this can be done. The condensing should always be finished against the wall of the cavity by the wedging process. It is required of us if we do the best thing in filling teeth that we do more than make the gold fit accurately the walls of the cavity. As we see from the billiard balls experiment, ivory or dentine is one of the most perfectly elastic bodies known. We should therefore use that elasticity of the dentine in every instance in filling teeth, by using such a force as will bring it into play. We can illustrate elasticity by striking a steel instrument directly onto an anvil. I have here an instrument that is of the same size at both ends and tempered throughout its length. When I let the mallet fall from a height of three feet on this instrument notice the rebound of the mallet caused by the elasticity of the steel. (This rebound was about three-fourths the height of fall.) We have precisely a similar thing in the walls of the cavity. If we wedge our gold tightly between the walls of the cavity and the gold already condensed, we will make use of the elasticity of the dentine by springing it away. The tendency is continually to return. That is, we will not only fit our filling perfectly to the walls of the cavity, but we will fit it to the walls of the cavity with a force that will cause a condensation of the dentine, the tendency of which is to spring back, and therefore grasp the filling with a tenacity that will prevent any possible movement or leakage. This resilience of the dentine, or its disposition to spring back, will continue to act so long as it is perfect dentine, or until the dentine has become disintegrated and lost its strength. In the use of the billiard balls it is seen that they may be struck again, and again, and again, and yet the elasticity remains.

In closing let me refer to filling teeth for children. As compared with adults their peridental membranes are thick and the teeth, though strong and good, have much more motion in their sockets and will spring away from the blows of the mallet in proportion, thinning out the force of the blow ,reducing its condensing power. This should always be considered carefully, and when it can not be overcome by increasing the force of blows, the fillings should be made by hand pressure. The elasticity of the peridental membranes is no bar to hand pressure work. One of the great difficulties that has produced the impression so generally among dentists that gold fillings made for children will not stand well, is the lack of appreciation of these facts and the consequent failure to make such fillings, good fillings.

APPENDIX.

(Added for the benefit of any who may wish to experiment along this line.)

Rules thus far developed for finding in simplest form by experiment the actual pounds or kilograms delivered by blows.

(1) With one of the larger instrument points, preferably the largest, in a thrust dynamometer, find the number of pounds or kilograms required to cut through a certain cardboard and bury the piece exactly flush with the surface of a certain block of polished boxwood, using the end of the fiber. This should be carefully examined with the binocular microscope and corrected until it is believed to be exact.

(2) Divide the area of the point used by the pounds, or kilograms, stress found in (1) to find the exact area of the wood (and cardboard) for one unit of force, and multiply the area of each smaller (or larger) point by this number as the primary determination of the stress required with each to produce results similar to the first; or let A represent the area of the first instrument and S the stress found, and let A′ represent the area of the smaller instrument and S′ the stress required. Then the following formula may be used:

$$S' = \frac{A'S}{A} \text{ or } S' = \frac{A}{S} \times A'$$

(3) When these have been calculated they should be carefully tried successively for each size of instrument in the thrust dynamometer. The results should be carefully examined with the binocular microscope to see that the papers are not left too high in the wood or that they are not thrust too far in below the surface. If irregularities are found between the larger and smaller instruments (from one millimeter up)the whole line must be modified by start-

ing the calculation from a little higher or a little lower point until the resuts will be regular for all of the larger instrument points.

Caution—It is important with the smaller points to scan the grain of the wood carefully with the microscope where irregularities occur, to see if the puncture has been wholly in the softer part or the harder part of the anual rings.

(4) Place the instrument first used in the thrust dynamometer in the falling weight apparatus and with the larger mallet try different heights until a certain height of fall is found that will give results exactly similar to those produced by the thrust dynamometer. When this is satisfactory, proceed to find the height of fall for this mallet with the smaller points as follows:

(5) Multiply the area of the next smaller instrument by the centimeters height of fall of the largest, and divide by the area of the largest and the result will be the height of fall for the smaller. Let A and H represent the area and height of fall for the larger instrument, and A′H′ the area and height of fall for the smaller, and the equation will be: $H' = \frac{HA'}{A}$. The stress found may be used instead of the area. Thus: $H' = \frac{HS'}{S}$. This latter may also be used to find the height of fall for any desired number of kilograms or pounds, when these have been experimentally proven correct for the various sizes of instrument points.

(6) The height of fall for any weights of mallets may be found thus: Let W and H represent the weight and height of fall of the larger mallet and W′ and H′ represent the same for the smaller, and the equation will be: $H' = \frac{W'H}{W}$ in finding the height of fall for a smaller mallet. It may of course be reversed for finding the height of fall for a larger instrument.

In all of this it must be understood that such a scale must be found for the particular piece of wood used; no two will be exactly the same in hardness. But the rules will be the same for all, including metal blocks.

ON THE ADVANTAGES OF A GOOD DENTAL CLUB*.

BY W. H. K. MOYER, D. D. S., LITTLE FALLS, MINN.

In the above title there are two words which should be heavily underscored or emphasized. They are good and club. Now why club and not society? Among professional men the word club stands for a small membership and more frequent meetings, thus a greater amount of personal contact and frequent part-taking among the members, while in the society with its larger membership and usually less frequent meetings the same opportunities are either not to be found or if there, are siezed on by the ones most willing to push themselves to the front, leaving the average man the part of listener or onlooker.

Do not take the meaning that there is nothing for him in looking on, or listening, for we all learn in that way, but they never take the place of the actual part-taking. Another point against the larger organization is the great liklihood of politics creeping in with all the sequence of clique or ring leadership, loss of attendance and dissolution—all to the detriment of the work in hand, that is professional advancement.

Now why the emphasis on good, or is that self-evident, and what are the essentials of a good club?

First of all a membership of men who are willing to work and willing to learn and as ready to give as to receive. A set of rules that compels each member to take, in his turn, an active part both as essayist and clinician. Then officers and demonstrators who will see these rules carried out. In order to get a clear idea of how a club works let us go back, say about ten years, and take for example a man who attended one of the first of these annual clinics or schools as they were then called.

He goes home with a general idea of extension for prevention, and occlusal anchorage. He realizes that there is a great deal more to gold filling and a more extended use for gold than he had learned of at school or had ever put into practice.

The first opportunities for putting into use these new ideas are eagerly embraced, but conservatively, that is, by using amalgam where gold should be employed—cavities not cut very wide. Perhaps he even goes so far as to attempt gold in a bicuspid with such a pleasing result that he resolves to tackle a molar, but fails in adjusting the rubber dam, so uses amalgam instead. Things go smoothly for some time, then in comes one of his best patients with a molar in which he has but recently made one of his choicest occlusally anchored proximal fillings. Tooth all right when filled, no previous trouble, but now aching day and night, and hypersensitive. He removes the filling and finds a very minute exposure of a horn of the pulp in the occlusal step. Follows arsenic—trouble—treatment, root filling, etc., ending with the loss of the patient. Next a cavity returns to him minus one of his cherished gold fillings, another with the filling broken at the junction with the step, another where his gold cylinders slid out from beneath the cohesive foil, and so on until he gives up the method as no good and goes back to the old orthodox ways.

---

*Read before annual Annual Midwinter Clinic, G. V. Black Dental Club, St. Paul, February 26 and 27.

At this point some good friend invites him to attend one of the monthly meetings of a club where they are discussing these new methods and illustrating them by clinics. He goes and finds from twelve to fifteen men gathered closely around a couple of operators, discussing each move as it is made, asking questions or answering them with great freedom. He is introduced all around, given a good position where he can watch an operator and quietly observes the work from start to finish.

After a lunch together they come to order in the afternoon for a business meeting, the discussion of the clinics, reading of an essay, etc. The man is thoroughly interested and asks his friend about joining with the result that in the regular way he becomes an active member of the club. For the first few months he takes a very small part in the meetings, although he is always called for in his turn in discussions of essays and clinics; but one day he receives notice that he is to clinic the following month. After putting behind him the temptation of resigning from the club he packs up his instruments (mostly new ones he has picked up since joining) and with fear and trembling goes to the meeting. He is assigned a case of a cavity in the proximal surface of a first molar—a gold operation. Now all of his watching and private talk with members has been very helpful, but so far he doesn't use the rubber much in molar cases. But here he must, so he punches about three holes in a piece of dam, gets out a clamp and begins. First he tries to adjust the rubber and while holding it in place with one hand apply the clamp with the other but for some reason that particular clamp refuses to hold, but insists on flying across the room. After two or three of these failures a fellow member quietly offers his assistance, examines the dam, punches six holes instead of three, picks out a clamp adapted to the case, calling our man's attention to the number of it, slips the clamp through the last hole in the dam, adjusts it on the second molar and with very little trouble exposes the six teeth. Our clinician now proceeds with his cavity preparation with infinite care and after a long interval announces it ready for inspection. The demonstrator looks it over, then shakes his head. Such and such a margin is not cut far enough, that cavo-surface angle not beveled right, the step isn't broad enough to stand the stress or the seat isn't right. His talk may run in this wise. "Now doctor, the seat isn't flat, it slopes outwardly, so that your filling will slide. You wouldn't want to sit for long on a chair tilted like that; neither must it slope inwardly, lest the margin be fractured. Make it flat," and with a few cuts with an excavator he squares it up. Now comes the placing of cylinders of non-cohesive gold, in the seat, which is accomplished after some instruction and the assistance of one of the men. Then the cohesive gold is started and carried on with suggestions as to condensation, lines of force in using the plugger, building out for a contact point, etc., until at last the weary man has the gold placed. The finishing is carried on in the same way, or perhaps the demonstrator with a few cuts with a trimmer puts it into shape for the polishing which our poor man at last accomplishes long after the hour set for lunch.

Too weary for words he goes to the lunch room where an hour of eating and light table talk gets him into a better frame of mind, and rested a little before the afternoon session begins.

Under the head of discussion of clinics a member gets up and from notes taken at the chair describes the operation and comments on it. He is followed by the different members who criticise the operation from start to finish in detail, with reasons for such criticism. The step was not deep enough, the gold would break at the step angle, it was cut too deep so that the pulp was endangered. The gold wasn't condensed enough to obtain a good specific gravity, or the cylinders not properly placed, etc. Now then our clinician sees the reasons for all those failures he had at home. He knows it wasn't the system at fault but his application of it that cost him his good patients—that lost him his choicest fillings. He realizes that the criticisms are just, but as they are made in the best of spirit and good fellowship, he goes home with the realization that it has been a red letter day in his career as an operator—that he has learned a great many things of real practical benefit, and learned them in such a way that he can put them in practice. Best of all, however, he has a big warm affection for the men of the club who have all been striving to make of him a better man professionally.

At subsequent meetings, through the quizzes, essays, discussions and clinics, his knowledge is increased and broadened along a great many lines. Nomenclature is studied by quizzes until each man can speak of any angle, surface or given part of a tooth or cavity in a manner that is understandable. Materia-medica is given its share attention.

Instrumentation comes in for a good overhauling as does the proper care of the instruments. The uses and places for the different forms of gold are brought out until none in the club are so unfortunate as one of our prominent eastern brethren in believing that non-cohesive gold is used to cover the seat because that portion of the cavity could not be saved with cohesive gold.

The ideal in cavity preparation is given most thorough study together with the conditions and places for its modifications.

Stress from the force of mastication, its amount, direction, results, etc., together with the means of dealing with the cavity preparation and filling material to guard against its destructive effects on fillings. Caries of the teeth, its initiation, spread, different forms, places to expect and conditions of liability and immunity. These are subjects often occurring. And as it is one of the vital factors in the conditions, having to do with the inception of caries, the contact point comes in for its share of treatment.

What is the normal contact point? What is it there for? What is its size and position on the various teeth? Why is it necessary to properly restore it, and how should it be done? Why in certain conditions should the point be placed differently than Nature placed it and what is to be gained by so doing?

All these questions are asked and answered, bringing naturally with them the matter of separating teeth with the reasons for so doing and the best methods. Enough of bacteriology to acquaint the members with the necessity for using rubber dam and special lectures and illustrations on its proper use in order to get the maximum of light and operating space. A monthly review of the leading magazines together with reports by the censors of the different branches of dentistry keep the men in touch with the progress of the profession in other parts of the world. Special patients are exhibited from time to time to illustrate new methods, appliances or conditions of success or failure of different operations. In fact all of the advantages of a college course are offered together with a great many more which no college can give. The members are all in active practice and from time to time bring in their difficult or unusual cases for consultation, thus broadening each man's chances for observation and practical knowledge. A dozen heads are better than one, in dentistry, as well as in other lines.

New methods of procedure in mechanical lines are commented on by the censors and when tried by members are brought in for the club's inspection and instruction, thus helping to keep the men abreast with the times.

Such advantages in practice as hygienic bridges, dove tail half caps, lower part plates with a wire replacing the usual bulky rubber in the region of the anterior teeth, pressure anesthesia in removing pulps, and dozens of other useful methods when once demonstrated are immediately adopted in practice. Yet they might be read about in magazines for months and few men would be awakened or understand them well enough to give them a fair trial.

So large a share of our work is purely mechanical that it needs practical demonstrations for successful teaching. Other mechanical work is not learned from books nor can that branch in our profession come to us in that way.

Practical illustrations we must have. There is one more matter which is almost sure to be brought to the man's attention, and while it naturally belonged earlier in the essay, as I wished to enlarge on it somewhat, it has been left to the last.

It is the matter of cleaning the teeth, and in this is included both the care of the dentist and of the patient.

If you please—just three questions:

1. How many of the dentists in this room really cleanse the teeth of their patients? By this I mean take off all deposits, both above and below the gum line.

2. How many clinics have you ever seen given on the subject?

3. What is the importance of it?

In reply to the first question I am going to make answer by drawing a parallel. A few years ago in a trip through the Pacific states in order to have an excuse for calling on the dentists I took the agency for a set of instruments designed to remove sub gingival calculus. In most cases the dentist wished to compare his instruments with mine so that I was enabled to examine a great many equipments. Of all the dentists on whom I called but three or four showed me instruments with which it was humanly possible to reach and remove such deposits. Comparatively few men were at all interested in reaching them and the great majority were utterly indifferent to, or ignorant of the great importance and necessity of the thorough performance of this branch of their work. Is it safe to conclude that the same conditions prevail among the men in this audience?

Question No. 2, regarding clinics: Only two such clinics have I ever seen and those both before a club—and to the best of my recollection never have I seen one advertised for a society meeting.

Question No. 3, the importance of it: Of what importance are the roots to the tree—of the foundation to the house? They are indispensable—no roots, no tree—no foundation, no house.

In operative dentistry the same importance belongs to that portion of the tooth lying below the gum line and if our work is to endure, our best efforts must be given to keeping that portion and the tissues surrounding it, in a state of health. What matters it if we apply all our best efforts to the crown, extension for prevention, occlusal anchorage, perfect contact points, well condensed gold, finely contoured gold caps, or porcelain crowns.

When we neglect the root all may be, and all very frequently is lost.

How many teeth have we extracted in the last year—the loss of which is due to calculus or as we call it in its last stages—Pyorrhea?

How many of our best patients are suffering from diseased gums at the present time and what are we doing about it?

Hasty scaling of the bulk of tartar above the gum line and polishing with a brush wheel and pumice stone will not suffice; all the tooth washes will give no relief—nor can we clean teeth for a dollar a set or throw in cleaning with the other work, and do our patients justice. Call the trouble anything you wish; put plenty of long words ahead of gingivitis or pericementitis to impress your patient, but insist that the work is vital to the welfare of their teeth, and insist that you be paid by the hour for your time. Then go at those teeth and really clean them. Tell the patient you must see them every few weeks or months until the mouth is in a healthy condition.

Now for the patient's part: Insist on the use of a good stiff brush used intelligently and frequently. No soft bleached bristle affair such as bold advertisers assure the public that all dentists advocate, but a good sized unbleached bristle brush that will retain its stiffness and permit of an actual cleansing of the teeth as well as a vigorous massage of the gums. What if the gums do bleed freely at first. Tell them it is a sign of an unhealthy condition that will disappear after a time. With the aid of a hand mirror call their attention to the condtions so that they may understand what they are trying to cure. Patients have returned to me with the statement: "Doctor, I never knew what it meant to really clean my teeth until I got the brush you recommended and used it as you directed."

Many people are brushing their teeth daily but few are cleaning them. To illustrate the difficulty of a proper cleaning try it on yourself. Use an ordinary brush with plenty of powder, going thoroughly over the entire mouth; then when finished, with a white silk handkerchief rub the buccal surfaces of the second and third molors, and examine your spotless silk.

Now if in these supposedly self-cleansing places or so-called areas of immunity one can still find soft deposits, what must the conditions be in the more inaccessible places? The producing of a condition even approximating cleanliness in the mouth, calls for a stiff brush, plenty of a saponaceous powder—both to be used intelligently and vigorously. After this side dissertation let us get back to our new member of the club.

What has been the result of his membership and attendance of say two years? During this time he has made three or four clinics, written a few essays, besides having benefited through his powers of observation. He now is invited to clinic before a state or a national society—just such an invitation as he has dared not accept before, but which now he accepts with few misgivings. He goes at his clinic as one who has a definite idea of what he intends to do and how to do it, answers questions readily with a reason for each move he makes. He knows what and why he is doing, and furthermore, knows why he knows.

Perhaps if his talents lie in that direction he is asked to present an essay before a society, which gives him a chance to advocate some of the good things he has learned, thus spreading the good of the club among new men, who in turn, may be awakened and interested. Can you not imagine the change in that man from a backward, silent society member who dared neither to speak or work in public, through lack of sureness or conviction—to a man who is willing to show what he may know and able to give his reasons for doing and believing the things he advocates.

Let us have more of fellow teaching. When a brother dentist comes to your office, don't treat your operating room as a holy of holies, but after getting your patient's permission invite him to watch your work at the chair. Unless you are doing work you are ashamed of it won't hurt you and may be of great benefit to him.

Among the large number of dentists of the Pacific states on whom I called—though I introduced myself as a practicing dentist—not one asked me to his chair, and when I remonstrated with one of them for this lack among them he said: "Why, doctor, I would be ashamed to let you see me work."

If the club does nothing else—has no other usefulness, it at least teaches men to work so that they are not ashamed to have their fellow practitioners watch them and for a summing up of the whole essay I can think of no more fitting thing to say in an argument for the club: To do your work so that you are not ashamed to have it watched. Is not this worth while?

THE PROBLEM OF CONDENSATION AND SPECIFIC GRAVITY OF GOLD FILLINGS.*

BY K. E. CARLSON, D. D. S., ST. PAUL, MINN.

The greater part of this paper was read at the joint meeting of the Wedelstaedt and Black Clubs at Clear Lake last June under the title of "The Problem of Condensation," so that I beg the kind indulgence of the members of these two clubs who were then present. I have dressed the old paper with some new clothes and renamed it as above. The paper's object is to again re-emphasize points that all should be most careful to observe and become as familiar with as the alphabet. I do not stand here with the presumption that I know more than you or to say anything really new, as before me sit men, especially two, whose words I merely echo.

Dr. Black has covered the field so well in his set of famous papers that are now dental classics, that anyone would hesitate in saying that more can be said on this subject. Yet this paper will not prove valueless if it only serves to remind you on your return home to again read Dr. Black's works and then read and re-read.

We are constantly striving after the better things by renewed effort. In William Morriss's study is the inscription "Content is our best having." In our work it is our discontent with ourselves that brings us together seeking content. Were we not discontented we would soon be permeated by a spirit of easy satisfaction with a constant retrogression. So my hope is that this paper may at least stimulate your discontent and cause you to seek new and higher ideals.

What is our object in filling teeth? Is it to repair the ravages of caries by careless preparation of cavity and placement of gold or even a care taking operation with lack of judgment and knowledge of fundamentals, for often we find such operations that fail through no knowledge of proper methods; or is our object to perform operations made with most painstaking care following proper lines in cavity preparation, in placement of gold, restoration to proper form and finish so that on its completion both the patient and the operator should feel that a life lasting filling, under normal conditions, has been made.

---

*Read at annual Midwinter Clinic, G. V. Black Dental Club, February 26 and 27.

That carelessness is abroad, recognized and sanctioned is illustrated in the June, 1906, *Cosmos* in a paper on "Forces Employed in Condensation of Gold in Cavities of Teeth," from which I quote the following: "It is a safe estimate that one-fourth of all the cohesive gold fillings put in (mark the put in) in many cases by experienced operators are loose, when the patient is dismissed from the chair; this being caused in many cases by too much malleting. A little practical suggestion of mine published some years ago might be mentioned in this connection. To detect a rocking filling which is not discernible to the eye, about the time of finishing, tack one end of a strip of gold two inches long to the filling allowing it to stand at right angles. Now tap the filling first on one edge and then on the other and abserve the gold move through space, showing the unsteadiness of foundation." Here ends the reading of this brilliant passage. Could anything cry louder, no yell louder of the absolute lack of knowledge of cavity preparation and placement of gold? Again to show at even a later date than June, 1906. Turning to the current February *Dental Cosmos,* we find an article on "A New and Easy Method of Making Gold Fillings," from which I take the following: "For many years I have distrusted fillings, the material of which did not stick to the walls of the cavity, * * * In the case of gold filling I think that the observant men will generally agree with me when I say that only here and there is found a genius who can consistently fill cavities with gold so that the gold is perfectly adapted to the walls of the cavity and the filling water tight. I am constantly seeing fillings made by myself and others which by the tell-tale blue discoloration or the white opaque ring around them show that caries is still progressing and that the filling is useless," and he goes on to tell how he reinforces undercuts with cement. I wish that I could introduce the L. D. S. Eng. & Glas. Lecturer on Operative Dental Surgery at the Birmingham University: Honorary Assistant Dental Surgeon to the Birmingham Dental Hospital, to about forty men here present, many without the title of genius, either before or behind, whose gold operations are standing the test of time without a crape of mourning encircling them, or a white zone of fright showing how scared they are about falling out. Enough dear friends, but could anything better illustrate the lamentable lack of proper cavity formation, placement of gold and stepping of the plugger point?

The necessary requisites of a well made gold filling are *proper cavity formation, adaptation of gold to margins* and *density of body of filling.* In this paper we will take the first two for granted, as its purpose is to show proper methods of obtaining maximum density.

In building a house, would you choose lumber full of knot holes? It might make a most comfortable residence on a tropical summer day, but how about the withstanding of heavy rains and winter blasts? Our dental operations are constantly battling heavy rains and heavy blasts in the form of saliva and masticatory stress. Therefore our gold fillings should be made as tight and dense as is in our power to make them. Of how long duration do you suppose the filling in Dr. Black's exhibit, page 750, 1895 *Dental Cosmos* made by Dr. L. with a specific gravity of 10, and per cent of air space of 43.2 would stay in service? (This filling made from 1/32 sheets, pneumatic mallet, 25 blows to pellet.) Please remember the specific gravity of gold is 19.4. Now right here let me say that although the title of this paper would seem to imply that the desired object is to obtain maximum density of all fillings, this to me is erroneous. The strength of patient to endure, the occlusion and stress of mastication, are factors to be considered. In those patients where we find great strength of bite, they will endure, in most cases, and need the strongest of operations, leaving the question of endurance to rest with the vitality of the dentist. To strive for a maximum density in those who physically cannot stand such operations is to assume a fanatical zeal and unbalance, whose only reward will be the breaking down of patient and operator.

On removing gold fillings from teeth, we find some that crumble into a powder, emitting an odor that words fail to describe, showing the presence of micro-organisms. We find some that yield readily to the instrument, but have preserved the tooth from the recurrence of decay, showing a perfect adaptation. These fillings, however, have not had the forces of mastication battering against them. We find fillings that show great density, but have failed through lines of cleavage, this line of weakness caused by no intimate contact between the different facets of the gold.

The last type arrests our attention. The cleavage is due undoubtedly to a change of instruments in the packing of gold. The instruments have been variable in size. It is also due to an improper placing of the individual pellets of gold in that, instead of building of gold, the lamina of which will lock and interlock, so that the whole filling carries the burden, the gold has been placed so that the least undue stress will tend to show chipping or cleavage.

In the changing of our instruments we must be more than careful. How many have not been guilty of patting down the pellets of gold with a foot plugger without a further condensation by means of smaller points and then afterward changing plugger? The facets of serrations must here be of different sizes. For instance, take a shingle nail and strike a ten-pound blow, the nail sinks into the wood a certain depth, then take a spike whose point is four to five times greater in area and strike the same blow. Its point barely enters the wood. Thus in change of instruments even in our No. 1, 2, 3 Weds, let alone the foot plugger there is a variation with the same blow and pressure with resultant lines of weakness.

In condensing gold we have various forces in different forms of mallets and hand pressure and the combination of the two. But the individual equation plays a greater part than many will acknowledge. For some of us with the best of equipment for life's work must ever yield to the man whose hand has a cunning that is inborn. In our club as a whole we have adopted the hand mallet and justifiably so as tested fillings have shown. Our gold as a rule is a No. 4 of the various forms of manufacture rolled by our assistants into pellets of sizes 32, 24, 16, 12, 8. Of plugger points the No. 1, 2, 3 Weds predominate.

I found altogether too much spring in the ordinary plugger so that I had Mr. Perry make the point of the plugger shorter, to a length of 20 mm. ranging but little from the straight, and if I can I use the absolutely straight plugger. The ordinary plugger point is about 47 mm. in length. In the new ones we dropped the graceful curves and made more bulky. The handle to pluggers to my mind have always been too small, when we wish to reinforce mallet with hand pressure. The handle may be covered with corrugated rubber tubing, that gives a better clutch to the fingers. Then we have a plugger of absolute simplicity, but mark my words, in this straight plugger we have an instrument absolutely dangerous unless intelligence is used in guiding it, for the power of a straight plugger is greater than many of you realize.

In condensing gold, large pluggers are only to be used on small pieces of gold and small pluggers to be used on large pieces. A dense filling need not be a hard filling. To quote Dr. Black:

"To make a dense filling does not require very heavy malleting but does require the gold to be used in thin pieces carefully and evenly laid and that the malleting be complete over the surface of each piece; such a filling will not be very hard.

"To make a hard filling does require very heavy malleting in addition to care in laying of gold if filling is to show great density as well as rigidity."

The best results are gained by use of small instruments with as little variation from the straight as possible, and small or medium size pellets of gold. Nothing is gained by the use of 8th when density is required, and they are only to be used in body of immense fillings. In starting filling and covering dentine the gold should be thick enough mass so that the plugger cannot penetrate. The mallet force necessarily varies with the tooth and condition of the peridental membrane. It stands to reason that a harder filling may be made in a molar supported by its many roots than in a frail lateral incisor, but bolster up that lateral incisor by means of a Perry separator and harder malleting will be endured and a more dense and rigid filling obtained. Fillings in proximal surfaces do not need to be as hard as those on which stress occurs.

The number of blows to each pellet has been tabulated and is well known, 32-40, 24-60, 16-80, 8-120. But to me this is useless for the reason that in our No. 4 gold the number of sheets per book vary in number from 12 to 16, so that the resultant pellets vary in thickness. A better method is to train ear and hand for sound and feeling of density.

More important than the degree of force of malleting is the stepping of the plugger point. Holding the plugger point with proper line of force. The stopping of the plugger is the determining point as to whether air spaces are to be present in fillings or not. Here the closest of attention needs to be paid to your operation, not skipping hither and thither in a mad attempt to condense all at once and not getting it condensed at all, but regular lines of movement must be adopted for the stepping of the plugger from the walls to the margins where it is to be condensed last. Moving the plugger point not the width of the plugger point but just a fraction less than its width. Greater speed in operation is obtained when maximum density is required by means of this systematic stepping for, having been over the gold once you know it is condensed, and the greatest and most essential property of filling is obtained, namely, absolutely tight margins.

The stepping of plugger and laying of the gold varies with every tooth. Certain rules are laid down which time will not permit in giving.

Now with proper cavity formation, placement of gold, and stepping of plugger we look to see what we have obtained in adaptation and specific gravity.

In 33 test gold fillings made by the Black Club in glass tubes. I tested for leakage and found none, and a strenuous aniline test was used at that.

Now for the specific gravity. The specific gravity of gold as before mentioned is 19.4; this may be slightly increased by heavy welding or rolling. The study of specific gravity of gold filling to give practical accuracy, would properly necessitate a series of experiments dealing with the various forms of gold, of pluggers, and these should be carried out on teeth in the mouth under normal conditions and then only can we set a standard. My few experiments has been limited to foil gold fillings made in glass tubes mounted in wood.

A great splutter of printer's ink bespattered the dental world a while ago on the question of high specific gravities. The weighing for specific gravity while not a difficult one calls for patience, greatest delicacy of scales. The fine dusts of the air sift in on scales and pans so that the scales must be balanced before each series of weighings. Last summer when starting in to weigh a few fillings to prove the correctness of some I had made the day before. I balanced the scales and then was called to the chair for a few minutes. On returning I started my reweighing and found a great variation from the day before. It puzzled me, as the day before the weights had tallied twice the same. When suddenly a mosquito shot out from under the pan. And I wonder if our friend from New York who obtained the marvelous specific gravity of 19.87 by means of an electro-magnetic mallet was not aided by one of those friendly famous New Jersey insects. To determine the effect of various size plugger points on the resultant density of gold, I made four fillings of 24-24s with as nearly the same force of blows as an intelligent assistant can give. The plugger points were respectively ½ mm., 1 mm., 1½ mm. and 2 mm. in diameter. The fillings were conscientiously made without any attempt at breaking world's records.

Filling No. 1, with ½ mm. plugger.
Air 292.5
water 277.2

15.3)292.5(19. specific gravity.
153

1495
1377

Filling No. 2, with 1 mm. plugger.
Air 296.6
Water 280.3

16.3)296.6(18.19 specific gravity.
Filling No. 3, with 1½ mm. plugger.
Air 294.7
Water 178.

16.7)294.7(17.6 specific gravity.
Filling No. 4, with 2 mm. plugger.
Air 289
Water 271.5

17.5)289. (16.5 specific gravity.

Thus we find as a result of test, but I acknowledge that this should be done many times, that as the size of the plugger points increase, the specific gravity of resultant gold fillings diminishes. The pluggers used were absolutely straight and you'll have to take my word that the man who made them was also absolutely straight, for figures lie, and so will men.

Without time to make more fillings to draw more accurate conclusions from, I draw data from fillings made by other members of the club.

I had one filling made of Packs ½ with No. 2 Wedelstaedt plugger with specific gravity of 19.2.

To counter this is a filling made with Wed alloy plugger 1½ mm. diameter with specific gravity of 16.4.

To show that force of blow is not the only requisite I wish to refer to a filling. I asked the operator if he had used great force in making. He said, "I hammered it like hell." Then I asked, "did you step your plugger carefully all the way through?" The answer was not so responsive and the resultant specific gravity was 17.1.

Two fillings made by two men who are so similar that they might have been cast in the same mold. One made a filling with Wed plugger No. 1 with specific gravity of 18.8, the other with Wed plugger No 4 with specific gravity of 15.4.

To let up on your good nature I will close with the remark that for the proper condensation of gold to obtain maximum specific gravity we must have—

First—Proper cavity formation.
Second—Well annealed gold in small pieces.
Third—A hand mallet in hand of well trained assistant.
Fourth—A small pointed preferably straight plugger.
Fifth—Reinforcement of mallet with hand pressure.
Sixth—Proper stepping of plugger.
Seventh—Conscientiousness.

THE RELATION OF THE DENTIST TO THE PUBLIC AND TO HIS PATIENTS.*

BY T. F. COOKE, D. D. S., BURLINGTON, IOWA.

The other day one of my good friends down in Iowa, Dr. Finn —I was going to say, of Cedar Rapids, but rather let me say of the United States—said to me, referring to the subject of this essay. "Well I see you are down for another sermon." The remark nettled me at first, for I have had a feeling for some time that I was getting more of a reputation in southeastern Iowa as a preacher than as a dentist. I felt that it was time I was beginning to practice. However, if you, to whom this message comes, will bear in mind that the subject in hand was selected for me and not by me, I am sure you will exonerate me from all blame in the matter, except in so far as the guilty parties were biased by some of my former efforts. But if I shall say anything that will broaden our vision of duty to our fellow men and make us feel a bit more keenly the responsibility that each bears to the other I shall be glad, and will be willing to suffer any opprobrium that may seem, in the minds of some, to attach to the followers of that highest of all callings, the clergy.

---

*Read at the Annual Midwinter Clinic G. V. Black Dental Club, February 26 and 27.

Some one has said, "Let first things come first," and right there if I followed the natural bent of my mind I would digress and would try to show you that the things that are of greatest moment, are the things that pertain to the highest type of living, the noblest and best within us—that these are "first things" and should "come first," but that was not my intention. I was simply thinking that in my subject, as it reads, our duty to the public comes first, and perhaps rightly so. Our relation to the great world outside of our profession is really, it seems to me, of prime importance. Too many men in our profession confine there energies to a too contracted sphere of usefulness. While it is true that expertness is demanded of the practitioner of dentistry today as never before and that specialization and concentration are necessary adjuncts to expertness, yet I believe it is not necessary to cripple the usefulness of our lives in other direction to attain this desired perfection in our profession.

The wise man said you know that "there is that giveth and yet increaseth and there is that with holdeth and it tendeth to poverty." In nothing is this more true than in our relation to people about us. The man who shuts himself up within himself and is not willing to give of his energy, his time, his trained intellect, his larger experience to those about him, soon stagnates, ceases to perform his normal function, either has a swelling of the head, and finally suppuration becoming a festering sore on the public body, or else gradually atrophies, becomes of less and less consequence in his community and finally fades away into innocuous desuetude. I saw a beautiful illustration of this thought the other day. It was of a brook that was singing merrily on its way through an arid plain to the great sea beyond. An isolated pool by the way said, "whither away so fast, my dear?" The brook replied, "I'm bearing a cup of cold water to the sea." "You had better keep it for yourself," said the pool. "You 'll need it before this hot summer is over." "Well," laughingly replied the brook, "I don't need it now and I'll do good while I can," so on it went carrying freshness and verdure with it, gladdening the hearts of the people on the way. It finally reached the sea. The heat of the sun evaporated it, the winds caught it up and carried it back to its native mountains, the cold air of the mountains congealed it and it fell as snow, to be again set free by the sun's rays and go laughing down the mountain side once more. But what became of the selfish pool that wanted to keep what it had for its own? It gradually became foul, a green scum came over it, it became pestilential, miasma lurked within it, people in the neighborhod contracted disease, finally moved away, the pool was deserted, at last dried up and the place that knew it once knew it no more. I do not need to point the application, your thought has preceded me in that, and you are saying to yourselves, the principle involved here is true as gospel, if it did come from the lips of only a dentist, I believe it is not professional egotism to say that we in common with members of other learned professions have a larger influence in our communities than many of our neighbors. Does it make any difference how we wield that influence? Shall we give them stones when they have a right to expect bread? Whether we believe in God or not, whether we believe that there is a time coming in which we shall be called to account for the way in which we have invested that which has been given us, by the power that brought us into existence, or not, would it not be selfishness of the grossest kind for us to withhold from those about us in our communities, the help which we might give that would make *this* life more worth living, and the giving of which would mean to us multiplied powers of usefulness? Have we any right, even eliminating any higher conception of life than the common brotherhood of man to husband all our resources for ourselves, devote all our time and thought and energy to the accumulation of, or the squandering of the God-given possibilities that lie within the range of a trained intellect?

I believe there is no profession or trade so ready as ours to share with its fellow craftsmen the good things that come into its life, and I am glad that this is so, glad that we have so high a conception of our duty to one another; but I believe, on the other hand, there is no profession that falls so far short of its duty to the public in general, that so often fails to fill the place in the community life that it should as does ours. "Brethren, these things ought not so to be." "From him to whom much has been given, much shall be required." You will observe that my idea of the dentist's relation to the public does not differ much from the orthodox idea of any other man's relation to the public, that I have not divorced the *dentist* from the *man* but would try to show that because of the dentist's place in the minds of the public in general, because of his increased power and opportunity, through a trained mind and certain cultural advantages, there is an added responsibility to the public, which I firmly believe, the proper recognition of, will one day be, an asset of great value, and that the non-assumption of will be a liability, that will mark the difference between solvency and insolvency at the bank of heaven.

As to a strictly professional relationship between the dentist and the public in general I have nothing to say. To our patients, we are dentists, to the public we are men. We should be men to whom the public can point with a certain amount of satisfaction that we are one of them. Men who inspire confidence, because of a clean, consistent life. Men to whom the younger generations growing up around us can look for a good example and not be disappointed. In smaller communities, especially, is it true that the professional man is, in a certain degree, looked upon as a leader. And however much we might like to shirk that responsibility, yet it is ours and we must measure up to it. "And while it is true that in the larger cities a man's influence may not extend throughout the community yet he has a certain coterie of friends whom he is either helping to higher planes of living or whom he is hindering in that growth. I cannot, therefore, but feel that our relationship as professional men to the public is such as to demand of us clean living, high thinking, freedom from the vices, and habits that may demoralize either ourselves or others. In fact, the creation of an environment about us that will be uplifting, ennobling, and that will as Dr. Hillis says, 'make right living easier for others."

When our relation to the public is such that people are influenced to employ us in preference to some one else then we speak of them as our patients and this new relation brings with it added responsibility. I say added responsibility, for we still have all of the responsibility herein-before-mentioned, as the lawyers say, and with it a responsibility to their physical well being, as well as a better opportunity to unconsciously impress our personality upon them. You know that there are people for whom you work who all unconsciously to them sap your vitality to a far greater extent than others and leave you exhausted, while others seems to impart strength to you, you feel rested and its a pleasure to work for them. If this be true in the physical realm, why not in the realm of thought and morals. If we owe it to the public in general, to be clean and wholesome in our thinking and our living, how much more do we owe to the people who place themselves in our care, and who, therefore, are compelled, in the very nature of things, to be under our influence for a longer or a shorter period.

But, with our patients there is a duty, or relationship, call it what you will that does not obtain with the public at large, except as it may influence them to become patients, and that is professional skill. It is this, or the lack of it, more thany anything else, I freely admit that draws people to us as patients, or sends them from us no longer patients. But, the fact that it is our skill that provides the open sesame to the confidence of the public, does not release us from our responsibility to their higher natures but rather enhances it. If our skill is such that a large number of people give *it* their confidence, then certainly we should see to it that we maintain that same high standard in other things, that they may not be disappointed in us there.

I believe it is the duty of every man to give to those in his care the very best that he can every time. And unless he is taking advantage of every possible means of increasing his knowledge of what is best, and his ability to do what is best he is guilty. Some people are disposed to say with reference to the future life, it doesn't make any difference what a man believes just so he is sincere in it, and lives consistently with his belief. And if we had no means of knowing what was right, perhaps, there would be some excuse for such a remark: but the Book says, "If any man willeth to do my will he shall know of the doctrine." And just so lots of dentists console themselves and salve their consciences, over their failures, with the remark that they are doing the best they can. If that is so they ought to quit. But it isn't so. There are ways in which dentists today can find out better ways. Of dental meetings in which knowledge is disseminated for those who are willing to learn, and of the making of dental literature for those who are willing to read, there is no end, and no man can give as a valid excuse for his blunders that he did not know. It is his business to know. No mere man has a right to tamper with a mechanism that it required the ability of an infinite-God to make unless he is at least honest enough to use all the means at his disposal to perfect himself in the knowledge of the work he has to do.

But, understand me, I do not mean to give the impression that there is no room for failure, or that it is possible to attain such a high degree of perfection that failure is impossible; but, failure ought to be the widely separated exception and not the ever-recurring rule. It is the *occasional* failure of some of our best men that gives to some of us weaker ones the courage to hope for something for ourselves. Were they paragons of perfection, never knowing what it was to meet failure, we should give up hope upon the very threshold of our endeavor, saying "these be gods and not men." One thing that stimulated me, to take hold and try to do better, was something that occurred the first time I watched Dr. Wedelstaedt at Des Moines. I was just as close to the operator as I could get and he was recounting a failure that he had a short time before, and in my simplicity I asked him, "Why, do you sometimes have fillings come out?" He dropped his chisel on the operating table and looking me in the eye said, "Why, God bless you man, of course, I do," and pointing his finger at me continued "and so does every other man." And I said to myself, well, if that's the case may be there is hope for me and I'll do my best to reduce the number to the minimum.

Was it worth while to stimulate hope in the breast of an almost hopeless failure? Is it worth while to help a man to get on his feet and find his normal element? Is is worth while to lift a man with naturally high ideals who finds himself, through ignorance, in the swine pen of low and morbid conditions, to a place of usefulness among his fellows? I think it is. I think it is work that the angels in heaven might well covet. And while no one who knows him, and perhaps fewer who do not know him, would accuse Dr. Wedelstaedt of belonging to that seraphic host, yet I know that if the opportunity were given there are scores of men in this room tonight who would be glad to testify that he had been to them an angel of deliverance from bondage to low standards in their work. And the men of the Wedelstaedt club of Iowa and the Black club of Minnesota, and those to whom they shall carry the gospel of a better dentistry will not cease to do honor to the man; to whom more than any other is due the propagation of the teachings of the immortal Black.

And right here I would like to digress long enough to pay tribute to the venerable and venerated God-father of this club, Dr. G. V. Black. While the snows of many winters have been whitening his locks and the onward march of the years, with their steady ceaseless tread have been consuming his energies, he has been giving himself a living sacrifice to the needs of the profession, until today the name of Greene Vardiman Black is upon more lips and his love in more hearts in the dental world than any other man in our beloved profession. And why is this? Is it because of his great learning? Is it because of his prowess as an operator? Is it because of his ability to think? Nay, Verily. He might have had all these and have shut himself up in his little office there in Jacksonville and made money and the world never have heard of him. It is because of his willingness to be spent in the service of others. Surely he was a wise man who said nearly two thousands years ago, "It is more blessed to give than to receive."

This then is the thought, that the responsibility of knowing how to do the best thing in the best way is upon every practitioner of dentistry today as it perhaps has never been before, because, as it seems to me this, more than any preceding period in our history, is the era of knowledge-dissemination throughout the dental world. And if it is our duty to know, it certainly is our duty to do. If there is any possible extenuation for the man who does not do because he does not know, that falls to the ground before the man who, knowing, does not do. The first man's is ignorance, the second man's is dishonesty. There you have it, which is better, to be a fool or a knave? If we unwittingly commit a wrong, though it may be as far reaching in its results, the penalty is not so severe, and we are not so harshly judged by our fellow men. But to him who knows the right and deliberately does the wrong, we can offer nothing in extenuation of the act.

Certainly our patients have a right to expect that we shall be honest, that in the performance of operations we shall not be influenced by so sordid, though necessary, a thing as the fee. That when we undertake a thing, no matter what unforseen difficulties or unpleasant situations arise, we shall be thoroughly conscientious in carrying it to completion. It is my candid opinion that the person who cannot overcome the temptatious to commercialism, who cannot put himself in the patient's place and do as he would be done by under those reversed conditions, has no right to be practicing any branch of the healing art. The man who lets the dollar obstruct his vision of duty as he knows it and sees it, whether the patient sees it or not, ought to be running a three-ball emporium on Washington Avenue instead of a dental office on State Street. And then our patients have a right to expect that we shall be clean. Oh, what a joy it is to go into a dental office that is clean! Where all the surroundings proclaim in a quiet unobstrusive, yet positive way, that here abides ability, honor, and cleanliness, and the greatest of these is—shall I say cleanliness? Perhaps you would not agree with me, but at least let us make these three the tripod upon which shall rest our claim to the patronage of the people.

It is my privilege at present to be associated with one of the oldest practitioners in the oldest city in the state of Iowa. Many of you know him, Dr. R. L. Cochran of Burlington. If my observation and the testimonies of many people with whom I have talked are correct, these three things have played a very important part in the building and holding of one of the best family practices in the state of Iowa, during a period of forty-four consecutive years. And what do I mean by cleanliness? I mean a place where as you enter the reception room you first *thought* is of cleanliness, where no offensive odors reach you through the olfactory nerves, where the eye does not rest upon dust and a disordered reading table covered with magazines of the vintage of long ago, whose only claim to your attention is that of superior age. Where as you continue on into the operating room, instead of being greeted by a floor littered with cotton pellets disks and strips, soiled linen and a jumbled motley array of instruments on the table, a silent, yet poignant reminder of the pleasures that await you, your first mental impression is, How sweet and clean and fresh everything looks! clean linen on the chair, clean floor, clean cuspidor, clean instruments and everything of a torturing nature out of sight. Neither would I stop here but would say that it should not be a place "where every prospect pleases and only man is vile." The operator must partake of the cleanliness about him. Clean hands, clean finger nails, clean linen, clean white operating coat, a well groomed appearance that in itself is indicative of painstaking as to details. But is this enough? I am not satisfied to stop here. I believe we owe it to our patients to live clean lives. To give them the benefit of a clear eye, a steady hand, and a clear brain. Have they not a right to demand that the hand that holds the chisel and directs the movements of an electric engine bur in the most sensitive of human tissue shall be free from the unsteadiness that results from late hours, alcoholic stimulants and deadly cigarettes. Some will doubtless say that I am attacking their inalienable right to live their own life as they please, but in my opinion that is not an inalienable right. It is ours to do as we please only up to the point at which our life touches some other life. When some one else's happiness or good is involved then our freedom of action ceases.

What shall we say then in summing up our relation, or our duty to the public and to our patients? Live the larger life. Give the people about us the benefit of any educational or cultural advantages that we may have had. Be a force for good and not for evil in the community. Give our patients the benefit of every ounce of brain power that we have. As Theodore Roosevelt said in a bit of advice to the boys of America. "In life as in a football game the principle to follow is, Hit the line hard; don't foul and don't shirk, but hit the line hard." Build on the triune foundation of ability, honor and cleanliness. Fear God, hate the devil, study the occlusion, extend your cavity margins to self cleansing areas, preserve the interproximal space in its integrity, get a specific gravity of at least nineteen plus, and don't forget the contact point.

THE TREATMENT OF CHILDREN'S TEETH.*

BY C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO, ILL.

This subject naturally divides itself into two parts—the management of the child, and the management of the teeth Temperamentally, physically and nervously there is so much difference in children that to ignore this factor and prescribe a set method of practice for all cases would result in confusion, failure and disaster.

The first visit of a child to the dentist is usually a momentous occasion. Sometimes it is undertaken with the direst dread, at others with the most eager anticipations; all dependent on the point of view given the child by the parent. The dentist's duty is to study the temperament of the child most carefully, and he should not content himself with anything short of obtaining a perfect mastery over the child, at least during the time the latter is in his office. The means to be employed in gaining this mastery are as varied as are the manifestations of juvenile human nature—probably the most varied of anything in psychological study.

The chief factor, the fundamental basis of success in controling children, is the exhibition of extreme kindness and the cultivation of infinite patience. Unless a dentist can bring this kind of an attitude to the management of his young patients he would better not attempt their treatment. And yet there are some children so unruly by nature and so spoiled by false training at home that to obtain command over them in the dental chair the operator must be firm with them almost to sternness. If the parent has no control over the child, as is sometimes unfortunately the case, then the dentist should be the means of giving the child what is probably its first real lesson in discipline. And let it be said that no class of men, not even medical practitioners, are placed in so favorable a relationship to these young patients for the purpose of instilling into them obedience and stability of character as is the dentist, and if the members of our profession would only rise to the possibilities of their opportunities in this regard they would do no small part in developing true manhood and womanhood in the rising generation. To bring up a child with no idea of individual responsibility, to foster a tendency toward avoiding any duty of a disagreeable nature, to always sprinkle roses for the child to tread upon, is weakening in its effect and results in deterioration of character and the pitiable failure to meet the emergencies of life as they inevitably arise.

---

*Read before the G. V. Black Dental Club of St. Paul, February 27, 1907.

A discriminating dentist can do much in his professional relationship with these young minds to develop in them stamina and force of character, and it is sometimes the case that the first real experience of facing and properly meeting an issue is fought out in the dental chair. To be successful in the management of children under these trying circumstances a dentist must be a rare student of human nature, and he should early learn just when to be yielding and tender, and when to be firm as adamant. But let it always be remembered that under no circumstances, however trying the case may be, should he allow himself to lose his own self-control and display temper or impatience; and whenever it has been necessary to be firm and even severe, he should invariably soften his demeanor by the utmost kindliness and an unmistakable interest in the little patient's welfare. To gain complete control of a child who previously has never been controlled by any one is no mean achievement, and the sense of satisfaction in the good attained, is well worth all the effort it requires to accomplish it.

One feature of the management of children in the dental office which in this enlightened age of child study would seem unnecessary of mention, but which unfortunately is still a factor in some instances, is the habit of deceiving the child as to what is to be done. There is no more fatal error, no more disastrous or appalling wrong, than to deliberately deceive a child, and the result of one such deception can never be fully estimated. To the dishonor of some parents we are occasionally asked even in the beginning of the twentieth century to become a party to such an iniquitous practice, but no dentist of any self respect or manhood will ever enter into such a conspiracy. It is always well of course to destroy in the mind of the little patient any sense of fear by making as light as possible of the probably severity of the operation, and by the utmost tenderness and gentleness of demeanor; but to deliberately assure the child that a certain operation will not hurt in the least when it is almost certain to hurt, and worse than this to pretend to be applying some medicament to a tooth and then suddenly seize it with the forceps and extract it is a monstrous and cruel wrong.

Ordinarily the first visit of a child to the dental office should be so managed, if possible, that no work of a disagreeable nature is undertaken. Mothers should be instructed to bring their children early, even before the necessity seems apparent, so that the child forms the habit of having the teeth examined and gets acquainted with the dentist. Thus, when fillings have to be made the ice is already broken and the way made easier. If the case has been deferred till toothache occurs, and the visit is one of necessity for relief the only operative procedure undertaken at this time should be merely to stop the pain. A sympathetic and personal interest should be manifest for the little sufferer, and the impression formed at this first visit that the dentist is a kindhearted gentleman and not all to be feared. When once confidence is attained it will usually be found that most children will tolerate any necessary discomfort in having their teeth cared for provided their pride is appealed to in the proper manner and they are upheld as little men and little women.

But the dentist should have a care not to overtax the courage of a delicate child, and should constantly watch with the keenest eye for signs of wavering or undue nervous tension during an operation. It is sometimes better to do temporary work and retain the confidence of the child than to always attempt permanent operations and thereby run the risk of creating distrust and dread. This is particularly true of operations on the deciduous teeth where the object is more to keep them comfortable for a few years than to do artistic and permanent work.

The materials for filling deciduous teeth are limited to those easy of insertion and not too exacting in their requirements. When cavities occur in the proximal surfaces of the incisors they are usually better managed with oxyphosphate of zinc than with anything else. They are ordinarily shallow, and the fact that they are frequently quite sensitive prevents the operator from giving them any appreciable retentive form. Cement can therefore be used when nothing else will remain in place. These teeth do not often call for much operative interference owing to their early loss to make way for the permanent incisors, but with the deciduous molars the case is different. They remain four or five years after the incisors are gone, and the problem of saving them when they decay is sometimes exceedingly difficult. They should be given early and frequent attention when the mouth is susceptible to caries, with the aim always of checking the disease and keeping the teeth comfortable for mastication. The reason for this is not only that the child shall be enabled to properly prepare the food for digestion during these early years, which of itself is very important, but that proper habits of mastication are established at this impressionable age. If the deciduous molars are allowed to decay and become sensitive the child involuntarily forms the habit of bolting the food without proper mastication, and this habit once formed is likely to persist through life. There are many people today who do not masticate their food to the extent which their present masticating apparatus would warrant simply because they have formed the bad habit of bolting their food during youth.

Simple cavities in the occlusal surfaces of these teeth are not difficult to manage. They may be filled with oxyphosphate of zinc, oxyphosphate of copper, pink base-plate gutta percha or amalgam, as is indicated in the individual case. Amalgam is more reliable than either of the others provided a proper preparation of the cavity may be made and it does not reach too close to the pulp, but sometimes we are obliged to temporize with cement or gutta percha.

The most difficult problem we meet in the management of deciduous teeth is to properly treat cavities occurring in the proximal surfaces of the molars. There are several factors in these cases tending to make them troublesome to control. They are usually sensitive, making them difficult of proper preparation for the retention of amalgam, which is the only permanent material we have for preserving them. Unless fillings are reasonably well anchored in these cavities they are likely to be loosened by mastication, and if we attempt too deep anchorage we are likely to approach the pulp. In fact these teeth do not usually present much area of tooth tissue in which to form a cavity and it takes but little penertation of decay to involve the pulp. It is always best to avoid irritating the pulp if possible, and to this end it is frequently advisable to use some other kind of material than metal to fill them.

Much of the discomfort experienced by children in mastication is due to the packing of food in the interproximal spaces wherever decay has occurred in these surfaces. If cement is used it very rapidly wears away so as to present a space between the teeth and thus invite a lodgment of food. Not only this but frequently we find the teeth drifting slightly apart as the jaw expands preparatory to the eruption of the permanent teeth, all of which increases the difficulty. In cases where amalgam cannot be used and cement is unreliable the patient may be made more comfortable with gutta percha than any other material, though this is, of course, more or less temporary in its service.

The problem is greatly complicated where two cavities face each other, and in some instances the surest method of making the teeth serviceable for mastication is to bridge across the interproximal space from cavity to cavity with gutta percha. This is the only material by which two cavities may be joined in this way on account of the individual movement of the teeth. If a rigid material like cement or amalgam is used the filling will very shortly be loosened from one cavity or the other, but gutta percha being more or less yielding will accommodate itself to the movement of the teeth without injury. If this plan is followed provision must be made to prevent the gutta percha from being forced down between the teeth in the interproximal space, and this may be accomplished effectively by placing a metal guard of gold, platinum, or German silver across the interproximal space allowing the ends to rest on the gingival walls of the cavities and building the gutta percha over it. This protects the gum most perfectly and admits of serviceable mastication without discomfort. As the gutta percha is worn away it may be renewed from time to time, and although this is at best a temporary operation yet it is in some of these troublesome cases the only procedure by which the teeth may be made serviceable.

In pulpless deciduous molars the case should be treated in the usual way, except that some care should be taken not to introduce medicines which have a disagreeable taste or odor. It is always desirable with children to avoid as much as possible anything which tends to create prejudice against having dental operations performed, and usually these deciduous cases may be brought under control by the use of the essential oils which are less objectionable than some of the more powerful antiseptics. Oil of cloves seems to be one of the best for this purpose.

TREATMENT OF THE PERMANENT TEETH DURING CHILDHOOD.

From the time the permanent teeth begin to errupt at about six years of age till the deciduous teeth are all lost and replaced by permanent ones at about twelve the care of the erupting teeth is a very important consideration and in mouths where there is great susceptibility to decay of the teeth the problem of saving the permanent ones is sometimes perplexing.

When the incisors begin to decay in the proximal surfaces shortly after their erruption it is seldom that we can insert permanent fillings in them at once. It is, of course, better if this can be done, thus making one operation sufficient and creating in the mind of the patient the impression that dental operations are effective when properly performed. But there are many patients who lack the fortitude at such a tender age to go through the necessary tension to have thorough work performed, and it is better to make several operations on the one tooth at different times and preserve the courage of the child than to attempt a perfect piece of work at the outset and break the spirit of the patient, thus creating a dread of having dental work done.

But let it be borne in mind that just so soon as it is found possible to have the temporary fillings replaced with permanent ones this should be done. In these susceptible cases the teeth can never be made too secure against decay even by the very best work the operator is capable of, and it is therefore well not to trust to temporary work longer than necessary. But in this connection it should be said that the attempt to use gold before the child is sufficiently under control to admit of doing a perfect piece of work will as certainly lead to failure as will the use of other materials more temporary in their nature. We must have a good technique in any operation calculated to be permanent and the requirements of gold in this respect are more exacting than for any other filling. In some instances we may employ inlay work in children's teeth before they will tolerate the exactions of gold foil filling and thus obtain a better result than by the use of any of the plastic materials.

Each case should be studied carefully with the idea of learning the temperament of the child and knowing how to gain such control as shall permit of the best service. The practice of dentistry in its highest attainment is a constant study of conditions, conditions of the mind, conditions of the teeth, conditions of the surrounding parts—all of which materially affect us in the treatment of every case. And in this connection there is no other one thing of equal importance in the ultimate saving of the teeth and the maintenance of a healthy mouth than the establishment during these early years of the correct principles and practice of oral hygiene. It is not the province of the present paper to go fully into this phase of the question, but it should be said in passing that no dentist is doing his full duty to the rising generation who fails to impress upon his young patients the importance of properly caring for the teeth and gums or who does not give full instructions as to how this should be done. This should also be followed by a constant surveillance to see that his instructions are carried out.

A very necessary consideration in the treatment of children's teeth is to watch carefully the condition of the first permanent molar. This tooth is one of the most important in the entire arch. It is the chief standard bearer of the jaws during the period when the deciduous teeth are being lost and the other permanent teeth are coming into place, and if lost early it invariably results in the jaws dropping closer together than normal which detracts materially from the force of character of the face. If it is lost subsequently to the eruption of the second permanent molar and the bicuspids it produces a tipping of the other teeth into the space so as to disarrange the occlusion. No arch is ever perfectly normal with the first permanent molar missing, and even in those cases where the space has entirely closed by the approach of the second molar and bicuspid and where the occlusion seems good from the buccal aspect it will be found defective if models are made and a careful examination is given the lingual aspect.

In view of its early eruption it is peculiarly susceptible to decay, and should therefore be watched most carefully and preserved by filling. Where it has been extensively broken down by caries before it comes to the dentist it may usually be restored to full functional usefulness by the inlay method, and no pains should be spared to place it in a condition of health and service.

As has already been stated one of the chief functions of the dentist in his treatment of children is to educate them to the importance of properly caring for the teeth, and in respect of the first permanent molar it may be said that this education should begin with the parent before the child is of responsible age so that the frequent error of mistaking this tooth for a deciduous one and allowing it to go by default should not be committed. Parents should be instructed to bring their children to the dentist not later than the third or fourth year, and then the coöperation of the dentist the parent and the child should result in every individual growing up with a good serviceable set of teeth.

IF NOT—WHY NOT?

BY A. W. THORNTON, D. D. S., L. D. S., TORONTO, ONTARIO.

Theodore Cuyler once said to a class of young men just completing a university course: "Gentlemen, be more concerned about making a life than about making a living!" To no body of men of whom I have any knowledge is this advice more applicable than to dentists.

At our annual gatherings we discuss root filling and cavity preparation, and porcelain and inlays, and orthodontia and crown and bridge work, until our very souls grow sick of the whole business; and were we perfectly honest we would admit than when a man stands before us to read a paper, many of us are asking ourselves, not "will this be good or bad," "new or old, spicy or prosy?" but many are trying to make a mental calculation regarding the length of the paper or the number of type-written pages.

If I were a preacher and wanted a text to preach from, I would ask the old question, "Is not the life more than meat, and the body than raiment?"

I trust you will not misunderstand me. These things which I have mentioned in connection with our specialty are all-important and essential, but have citizenship and patriotism and sociology no place in the life of a dentist? Let me say honestly, and yet as

---

*Read before the Alumni Association, Dental Department of the Buffalo University, March, 1907.

forcibly as possible, "These things ought ye to have done, and not to leave the other undone?"

You may possibly be asking yourself why I have chosen a subject such as I purpose presenting, and my answer is, because that at every convention of dentists the fact is dilated upon that, as professional men, dentists have not reached the status accorded to men of similar ability in other professions. And the question arises "Why?"

Let me change the form of the question, for I dislike very much comparing ourselves with medical men or lawyers, or anybody else; for truly "comparisons are odious" and such comparisons always suggest the thought that we would like, if possible, to ape or imitate some other body of men, and that we are sore or piqued because we cannot do so successfully.

I read sometime ago a book, in which the hero, talking to the heroine, uses these words: "I desire to attain to my own full stature." If that sentence means anything; to me it means, without any reference to anybody else, that it is every man's duty to be as big as possible. And so I will put my question thus: Have dentists attained to their own full stature? If not, why not?

From the very nature of our occupation we are housed in for the greater part of our time, and this fact alone has a tendency to make us recluse and sedentary. Much of our time is spent and many of our operations are performed for women and children. This has a tendency to made some dentists effeminate.

After being in the office all day operating, or worrying because we have nobody to operate upon, there is a very great tendency to spend the evening with wife and children, "the world forgetting, by the world forgot." No man practising dentistry today can subscribe more heartily than I to that stanza:

"A fire upon a wintry night
  When skies are dark and gray;
An easy chair, a book in sight,
  And Heaven's not far away."

But we must realize that this is a time and state, not of "heavenly rest," but of earthly hustle, and with so much all around us that is earthly, sensual and devilish, with so much to do—and so little time to do it; every dentist owes it to himself, in order that he may attain to his "full stature," to take himself metaphorically by the shoulders, kick himself out and get to work and do something.

Possibly some one is already beginning to wonder upon what data I have based my deductions. I confess that I know nothing about the dentists of the City of Buffalo nor the State of New York, but I *do* know something about the dentists of the City of Toronto and the Province of Ontario, and I imagine conditions do not differ materially in the two localities. Let me ask how many Buffalo dentists have served on the board of education of the city? How many have acted as aldermen? How many have acted as mayor or chief magistrate? How many have had a place in the state legislature? How many have served as United States Senators? How long ago since a dentist was Governor of the State of New York? You may ask me "What has all this to do with the practice of dentistry?—and I will reply—"Everything." Why is it that dentists in every State in the Union and in every Province in the Dominion of Canada find it so difficult to obtain anything from the Legislatures of these various states? Why, because there are no dentists in these bodies. The dentists that are known best are the men with the flaming advertisements. Legislators know that these men are charlatans, but *they do not know* that between these and the decent men of the profession there is a gulf fixed, as wide and as deep as that between the city whose streets are paved with gold and—the other place. How could they know of the decent fellows? They are never heard of in connection with the affairs of the city or state, and the result is that the advertiser—that parasite who lives by trading on the credulity of the public, is looked upon as the hustler, the leader of the profession; while the decent, conscientious man, whose only medium for becoming famous is the brass sign bearing his name, which adorns his place of business, is looked upon as a decent sort of chap, but lacking in that projectile force which is essential to make a "go" of things.

Once again let me say get out into the activities of life, into educational, or philanthropic, or civic, or political work—not for what you can get out of it, but for what you can put into it. Not that your ear may be flattered by hearing yourself spoken of as "Trustee this" or "Alderman that," Mayor Johnston or Senator Jackson, but because that as a citizen of this great Republic you owe to your country the duties of citizenship, and should be willing to assume those duties in whatever capacity you can best render service to your fellow-citizens.

Another reason why we are not attaining to our full stature, why we do not receive the recognition to which we are entitled is, that dentists have not yet rid themselves of the idea that they are not sellers of gold and alloy and porcelain and vulcanite.

Oh! for God's sake and for your own sake, and for the sake of the profession that mothers you, get rid of that idea. You are not merchants selling precious metals, *but men restoring to normal, healthy condition* organs which have become diseased and disabled—and for such service let us demand a fee based upon the value of the service we render to the patient, *not upon the cost of the material usd in the restoration.*

I know that "a man's life consisteth not in the abundance of things he possesseth," but I know, too, that a man who cannot earn and command a certain amount of money is today looked upon as a failure.

Why are there not more men at our conventions? Is it because the fellows who are not here feel that they know all about dentistry? No! Is it because that they do not enjoy a holiday or a little time in the city, or meeting old friends and renewing old friendships? No!

In a good many cases the men feel that they actually cannot afford the time and the expense. Why can they not afford these things? Do they not work hard enough? Yes, but they do not get enough for the work they do, and they must stay on the treadmill. Dickens makes one of his characters say when asked how life is going: "Life is one damnation grind!" and to many dentists the words are peculiarly appropriate.

Does an evil exist in dentistry, and among dentists such as I have indicated? I believe it does. Can the evil be remedied? I believe it can. Where must the inspiration come from, where must the reformation or renaissance or revival, or whatever you like to call it begin? I believe in the colleges. The character of the men who lecture to the students from day to day, the character of the demonstrators who associate with these students, will, more largely than we imagine, be reflected in the profession after the students have become practiontioners. How necessary then, that the man on the rostrum, and the man in the infirmary, and the man in the laboratory, should be broad-minded, courteous, progressive, public-spirited. The democratic spirit of the age revolts from the pedant, the autocrat, the boor or the common scold.

Permit me to quote just one paragraph from that very readable book, "Counsels and Ideals," from the writings of the great Dr. Osler:

"It is now generally recognized that an important, very important, part of education; academic, technical and professional, is the personal influence of the teacher upon the taught." Be the building, the laboratory, the equipment, ever so perfect, there yet must be this essential: *personal contact between teacher and pupil.*

We must realize, however, that that personal equation may make for evil as well as for good. How wise then should be the choice of those who are to exercise this potent, all pervasive influence for good or ill. Many of the schools, recognizing the necessity that exists along the lines that I have indicated, have established chairs of ethics. This action is most commendable. But do not let us deceive ourselves. An hour a week from one man teaching ethics *will not* counteract the evil that may be exercised by several professors or demonstrators whose every word and action stands out in glaring contrast to the ethics (gathered largely from books) which may be taught from the rostrum.

Let us, in the name of all that is great and good, and decent, create about the Colleges of this North American continent, an atmosphere such that those who breathe it for three or four sessions, will go out to their life-work feeling that they have been equipped for service, and determined to do all that in them lies to gain and maintain for their chosen profession that recognition which, for too long a time, it has been denied.

THE VITAL SIDE OF THE DENTAL PROBLEM*.

BY EDWARD C. KIRK, D. D. S., SC. D., PHILADELPHIA, PA.

Mr. President and Gentlemen: In asking your attention to the topic which I have the honor to present for your consideration this evening I am well aware that I lay myself open to the charge of carrying my mental coals to an intellectual Newcastle. Indeed, I have feared that the discussion of the importance of the vital side of our professional work before any audience of intelligent students of dentistry might be deemed a work of supererogation, but in Chicago the scene of the labors of Black, of Talbot, of Cook, of Buckley, of Hinkins, and the host of men whose interest leads them into the study of the deeper and scientific features of this same vital factor, I am sure that to them at least and those who think sympathetically with them, the presentation of my chosen topic will in some respects lack justification. It is not, however, my purpose to attempt to further convince those who have already recognized the importance of the vital factor in our professional work, but rather to so present the subject that the discussion of it may tend to establish a better view point and attitude toward our professional work, or to borrow a simile from our Episcopalian brethren, to unite in a recital of our creed with the object of defining our position, orienting ourselves, as it were, so that we can attack our problems more intelligently, more successfully and develop more rapidly and up to a higher plane of efficiency the possibilities which dentistry contains within itself for the greater service of humanity.

---

*Read before the Chicago Odontographic Society, February, 1907.

When one studies the definition of the word dentistry as found in the various lexicons one is invariably struck with their lack of comprehensiveness, not one so far as I am aware measuring up to the full meaning of the word "definition," that is to say a descriptive statement or term which includes everything that a thing is and excludes everything that it is not. All definitions of dentistry by lexicographers have one common feature, viz. they give point and emphasis to the mechanical, the prosthetic or restorative element of our professional work and many indeed confine their definition of dentistry to that aspect of it. So prominent a position is assigned to the manipulative and mechanically restorative element of dentistry by the majority of its practioners and teachers that this material phase of it, if we exclude the operation of tooth extraction, has come to be the principal feature by which our professional work is characterized by the general public as well. Whether this attitude of mind correctly represents the work and position of dentistry is the question which I wish to examine with you this evening.

A prominent and well-known teacher of dentistry has recently said, "I want to contend..........that the mechanical training, the technical training of dentistry, has done more to make it a respected and honored profession than all the excursions into the doubtful realm of medicine. We are respected by the medical profession not because we can discuss with them the more abstruse questions of medical science, but because we can do with an exquisite technique the surgical work of our own special field—the mouth."

Let me at the very outset make my position as clear as possible with regard to the "exquisite technique," the mechanical skill and the whole question of mechanics and mechanical achievement both in and out of dentistry. I give place to no man in my admiration, my respect for mechanics in its science and in its applications. I know of no other material demonstrations that show forth so wonderfully or so perfectly the divinity that doth hedge a man as the creations of his intellect executed by his hands and materialized in the things mechanical which he has done. Nor is my admiration merely on a scholastic basis for mechanics is my pastime, my recreation, and my constant source of pleasure so that where necessary I stand ever ready to defend mechanics and its devotees in any event which would try to rob them of all that is their due in honor, place or reward. But the question before us is not the intrinsic dignity or value of mechanics in dentistry, but rather what relation does mechanics bear to dentistry. I put the question in that way because from oft repeated observations recorded in our literature I am constrained to believe that there are many among us who seem to have the opinion that the mechanics of dentistry *is* dentistry and there is the end of it.

My friend with the "exquisite technique" who objects to "excursions into the doubtful realm of medicine," while he would doubtless resent the suggestion that the whole of dentistry was comprised within the limits of its "exquisite technique" has so stated his case as to lay himself open to the suspicion that he is bordering very closely upon a belief in just that narrow limitation and anyone who is in the habit of observing the trend of dental professional thought must have been impressed with the fact that there are very many, too many indeed, of our professional colleagues whose conception of dentistry is of just about that same magnitude.

The old axiom that what a man believes, that he is, contains more than a grain of truth, for belief tends to create our ideals and to guide and control our actions, hence it is of the utmost importance that our beliefs about dentistry should be correct beliefs, otherwise we do an injustice to our profession by misrepresenting its position and its purposes in relation to the service of humanity, and we hinder and obstruct its progress by diverting its activities into wrong channels of effort.

In the contemplation of the mechanics of dentistry, and in this I include its "exquisite technique," both operative and prosthetic, too many of us have mistaken the means for the end. Broadly speaking, all technical operations in dentistry, from the insertion of a filling to the insertion of a prosthetic fixture, from the local operative treatment of pyorrhea to the correction of malocclusion, have the common purpose of restoring lost or disordered function and to that extent are therapeutic in their essential character, just as certainly as the administration of digitalis for a weak cardiac action or of quinine for malaria are therapeutic measures. The means are different in each instance, but the objective purpose in all is the same.

Dentistry then is a department of the science and art of healing, and to that end it makes a certain use of mechanics among its therapeutic means.

My mechanical friend has apparently failed to see that it is dentistry that has dignified its mechanics rather than the reverse, and that it has done this because of the vital factor in the case. There is no operation of a mechanical nature known to dentistry requiring as such any more "exquisite technique" or greater refinement of manipulative skill or finer artistic sense than hosts of skilled mechanicians in other arts are called upon constantly to display. Witness the work of the lapidist, the engraver of gems, the die sinker, the jeweler and watchmaker, the carver and sculptor and many others. What maker of dental prosthetic appliances, what dental operator has ever excelled these; how many have ever approached them in their creations viewed simply as products of manipulative skill? Therefore, it seems to your essayist that in all our talk and self glorification concerning our mechanical skill and "exquisite technique" we have mistaken our position and glorified the means while overlooking the end for which this mechanical work is done. Dental mechanics has gained all of its dignity and importance because it is done upon the human body for the cure of certain vital defects and ailments to which that body is subject and dental mechanics has grown in greatness and importance in proportion to the perfection with which it fulfils that end.

It is because of this view that a knowledge of the human body became necessary to us as a part of our educational equipment. Within certain limitations it is necessary for us to know the composition, the structure and the mode of functioning of this human machine, an important part of which it is our province to repair when defective and to keep in order to the end that it may be maintained in health. The necessity for this knowledge becomes more and more evident the more critically and carefully we study our art even if we view it only from the mechanical standpoint. How can an appliance be made to restore the function of mastication without a knowledge of the function of mastication as a basis or point of departure in the manufacture of the restorative appliance, and if we admit the necessity for such elemental knowledge we are launched at once upon the deep waters of anatomy, chemistry, physiology and pathology before we have even begun with mechanics.

Teeth have been filled, as the term is used, for some hundreds of years. Our records indicate that even in the tenth century gold was used to stop cavities of decay in human teeth. How well it was done is not stated and in the millenium since that time the mechanical operation of plugging gold and other metallic foils into cavities of tooth decay has been empirically performed with all grades of skill from the "exquisite technique" to the "abominably inefficient" until our own time, when, as the result of an appreciation of the vital factor, two giant intellects attacked the problem from that standpoint and the dictum of one came from Berlin crystallized in the maxim, "dental caries is a germ disease" and the other was the dictum of the giant from Chicago "The margins of a cavity must be laid upon areas of tooth structure that are relatively immune to the attacks of caries-producing organisms in order to prevent a recurrence of decay." None has seriously questioned the truth of either for the demonstration of the truth of both has been final and convincing.

But what of the mechanics and the "exquisite technique" in this connection? The answer is not far to seek, by virtue of the dicta of these two master minds in our profession the mechanical operation of filling carious teeth has been transferred from a basis of empiricism to a basis of scientific rationalism and the operator is classified in accordance with his conception and application of the principles which I have quoted. Because of this revelation of Miller and of Black of the vital factor in dental caries our operative procedures for the cure of this disorder must of necessity be modified in accordance therewith and must of necessity be adopted to the limitations which this vital element imposes, therefore we may well ask by what right shall a man attempt to do a filling operation upon other than rational lines and how can he even know how to intelligently shape a cavity for a filling without a fair knowledge of bacterial pathology and the causes of caries in particular. But our problem is a still larger one. Why do we fill teeth, to what end or purpose have we developed through long centuries of endeavor this exquisite technique, this wonderful diversity of methods and ingenious contrivances that have become necessary to our work in this connection? Is it not solely because we hope by this mechanical operation and its associated procedures to arrest the destructive progress of tooth decay and thus prevent the eventual loss of the teeth? If that be our purpose then we way well ask, is it reasonable or rational for us as intelligent members of a profession that some are even inclined to classify with the learned professions, to begin our preventive measures long after the ravages of dental disease have accomplished much of their destructive work in the mouth? Is it compatible with the claims that we make for ourselves, our scientific advancement, our learning, our manipulative skill, that we have done so little in the domain of preventing the diseases which it is our province to treat all because we know so little about the remote and more intimate causes of them? Is it not high time that we rise to a higher conception of our mission as servants of humanity and develop a more earnest and sympathetic attitude toward the kind and extent of work necessary to solve some of the foundation problems that the vital factor in our professional work imposes?

It is now over twenty years since Miller gave to the world the results of his epoch making studies upon the etiology of dental caries—from which we know that caries is a germ disease and from which we know that it can be artificially reproduced in a culture medium of fermenting bread stuffs inoculated with caries producing fungi, but we do not know why one individual is susceptible and another is immune to this disorder, the question of cleanliness or uncleanliness in the individual does not alone account for this difference. All the work that has been done with the hope of discovering a germicidal element in the oral fluid of carious immunes has thus far ended in negative results and in the study of this question we are being steadily driven back nearer and nearer to the deeper questions concerned in bodily nutrition. The same situation is also true of the etiology of those other two great sources of destruction of human teeth, viz., dento-alveolar pyorrhea and dental erosion so that whether we will or will not we are inevitably being forced into the very position which the teacher whom I have quoted objects to, viz., "excursions into the doubtful realm of medicine," for two reasons, first, because what may in one sense be regarded as the more precise, material and practical resources of dental mechanics which we have called to our aid and upon which we have depended through the centuries has thus far proven itself wholly inadequate as a means to the end in view and must ever remain as the material demonstration of our inability to prevent, though we may patch up the effects of the destructive process. Secondly, we are being driven into the field of medical science because in their essence the vital problems of dentistry are in nowise different to those of the healing art in general and because it is in that direction that the greatest light has come and will continue to come.

I plead for the unity of dentistry as dentistry and deplore the tendency not infrequently manifested by the manipulative man, the man of mechanics and of exquisite technique, the so-called practical man to not only disregard the surpassing importance of the vital element in our work, but to glory in the belief that his own sphere of activities comprises all that is embraced in the field of dentistry. I ask for a larger view of our noble calling than such a condition of mind indicates and a more sympathetic and helpful attitude toward those who without hope or desire of reward are laboring to solve the hidden mysteries of the vital side of our work. Let us have a larger conception of the meaning of the word practical and realize that the end of all scientific work is necessarily practical in the superlative degree. The telegraph, the telephone, the steam-engine, the Bessemer steel process, were in their inception scientific theories but in their practicality they have civilized the human race and made life as we now know it well worth the living.

The scientific workers in dentistry, those concerned more particularly with the study of its vital problem have already driven their investigations beyond the limits of the accepted standards of the dental educational curriculum and well over into the field of medical research so that today we are seriously confronted with the inadequacy of the present methods and extent of dental training if we are to keep our students apace with the advance guard in professional equipment and attainment.

The pressure upon us for a revision and enlargement of our educational system has reached an acute stage, we can no longer ignore the fact that we are at the parting of the ways, one of which leads to a broader and nobler professionalism, the other to a mediocre specialism. So evident is this situation to the minds of thinking men in dentistry that the president of the International Dental Federation will say among other things in his announcement of the coming meeting in Amsterdam, "The question which now after a period of comparative quiet is again agitating the minds of dental teachers and practitioners as well, concerns the education which should be demanded of the dentist in future. The question whether the dentist should above all things be a full graduate in medicine with a knowledge more or less complete of dentistry superadded or should begin somewhat earlier to so shape his course as to best enable him to meet the demands which his profession and his patients make of him is one which the F. D. I. pronounced upon in its sessions at Stockholm in August, 1902. In the meantime the question cannot be considered as having been definitely disposed of. It is on the other hand perhaps more acute at present than at any previous period in the history of our professional development."

The problems of tooth loss and tooth destruction are dental problems, but because they involve the vital factor then for their solution must be brought to bear all that is to be known of the phenomena of vital action, cell activity, nutrition, physiological chemistry and the whole group of correlated subjects necessary to the understanding of the vital factor. Are we to surrender this, our birthright, to the scientific researchers of general medicine and rest content with our attainment as mechanics or shall we go in and occupy this promised land, claim our birthright and make of dentistry what by virtue of its inherent possibilities it potentially is now, a really learned profession?

If we are to do this larger thing we must escape from the limitations of the idea that we can train a student for the intelligent exercise of his profession in three annual sessions of thirty-two weeks, for it takes longer than that to make a good plumber, carpenter or blacksmith. We must not only lengthen the course of instruction but enlarge it by the addition of a considerable number of elective studies which will enable the student by wise selection therefrom to develop strongly in those special departments of professional work to which his tastes and tendencies best adapt him and all of this should be done in the dental school for reasons of pedagogical economy and because the animating motive of dental education first, last and all the time should be the making of the best dentist, not the making of a physician with a dental appendix to his medical education.

THE OUTLOOK FOR 1907.*

BY W. A. JOHNSTON, D. D. S., PEORIA, ILL.

"I lang hae thought, my youthful friend,
A something to have sent you,
Tho' it should serve no ither end
Than just a kind memento;
But how the subject theme may gang,
Let time and chance determine;
Perhaps it may turn out a sang,
Perhaps turn out a sermon."

The gentle Scotch poet must have been given a task to perform by our genial Dr. Luthringer, who furnishes the subjects, but not the substance for our evening discussions.

It is a great thing to start right. The sprinter in a 50-yard dash realizes that a poor start means almost certain defeat, while to a long distance runner a proper start is almost as essential as a strong finish.

---

*Read before the Peoria County Dental Society, January 8, 1907.

Our start as a society has been a good one and our chances for success are excellent, but who ever dreams of claiming a victory after the first or second lap?

Round and round the circle of the years we must go, alternately hissed and applauded, encouraged at one point, disheartened at another, still pressing on with but one thing in view—the finish.

I stood once on Cemetery Ridge at Gettysburg and heard with a thrill the story of the desperate charge by the Confederates up that rocky hillside in the face of a withering fire of musketry. The guide said that one poor fellow who was all shot to pieces, was taken to the hospital, where he received careful attention. The next day as he lay in bed, one of the good angels in petticoats, who called to minister to his wants, asked him where he was wounded. "At Cemetery Ridge, ma'am," was the answer, "Yes, I know, you came in with the others who took part in that fearful charge, but whereabouts were you shot?" A slight flush came to the soldier's cheek as he answered proudly, "I was almost at the top;" sank back and died.

Members of the Peoria County Dental Society, how many of us can say, when, after life's battle we lie wounded and ready to die, "I was almost at the top?"

This Society is an integral part of the state society. The members of one are members of both. Failure on the part of the county society means a weakening of the strength of the state organization.

Our local society lost several members last year, and it is up to us this year to get them back again, or bring in new men to fill their places.

Two thousand years ago the Master said, "No, man, having put his hand to the plow and looking back, is fit for the Kingdom of God." And such mighty mean men are supposed to get to heaven nowadays, that if a quitter isn't fit for heaven where allowances are made for a man's weakness, we surely do not want him here.

Pardon me, for using a Biblical illustration at this point. When the children of Israel were fleeing from Egypt, they got into a very tight place. Hemmed in by mountains on two sides, they found an arm of the Red sea before them, Pharoah and his hosts were behind them, and things began to look pretty strenuous for the Jews. The record reads "And the children of Israel cried out unto the Lord. And the Lord said unto Moses, 'Wherefore criest thou unto me? Speak to the children of Israel that they go forward.'" You all know the result.

Fellow sinners, we are in much the same fix as the Hebrews. We must hike. We cannot go back, we must go on. Now wouldn't it have been foolish for Moses and Aaron with a priest or two, to have gone on alone through the Red sea and come out dry shod on the other side? What would have happened to the multitude who stayed behind? The leaders would probably have reached the promised land in two weeks, while the ones who refused to march on would have been back in slavery in two days.

We cannot expect our president and secretary to gather the program committee under their arms and go ahead with the work of this society. They cannot do it, and they would be foolish if they tried. Of course, we expect that those whom this body has honored by election to office will do all the planning, and most of the work but they cannot get along without the help of each one in the society.

Another illustration, as old as the pyramids. When the top stone of Cheops was to be placed in position, so the story goes, all the men on the job were assigned to places at the ropes which were arranged over primitive pulleys, to lift the great rock into place. The finishing of the pyramid was such a big event that everyone in the country round about had come to see the last stone set, but when it was almost up to its final resting place, the combined strength of those at the ropes were insufficient to move it the last foot of the journey. So the overseer cried to the spectators for help, and all the men who had been looking on, ran and caught hold of the ropes to help, but in vain. The stone had caught in some manner and refused to move. Then, without urging, the women who had been standing by, added their efforts, also in vain. At last, the children came, catching hold of the very ends of the ropes and with a long pull, a strong pull, and a pull altogether, the obstacle was overcome, the stone was lifted into place and the deed was done.

Here is the lesson for us for 1907. Let every one do his part.

"Each one in his place is best
And what seems but idle show
Strengthens and supports the rest."

Some in the society hang back and refuse to help because they say they cannot do as well as the other fellow. How do you know how well you can do until you try?

Some say they haven't anything new to offer. What of that? How much that is new, have you heard tonight? Yet you have been obliged to listen to it. Some haven't time. That isn't so. This paper, such as it is, was written Monday morning between 3 and 6 o'clock, and every one here tonight was alive at that time and if necessary could have been engaged in the same occupation that I was.

Now that we are growing personal, let me say that what is produced by the greatest effort is not always of the greatest good.

Two years ago, I read a paper before the state society. On this paper, I had put months of original work, spent forty dollars in money for instruments and photographs, done considerable corresponding and used up brain cells in car lots.

The paper was read in fifteen minutes, at the end of a long session, to an audience of about fifty tired people, complimented in the usual way by those appointed for the purpose, and the subject passed.

Last year, Dr. Hinkins read a scientific paper on which he had spent an infinite amount of pains, including midnight oil, and money, and his fate was if anything more discouraging than mine.

Last year, Dr. Luthringer read a paper on a common but very vital subject, telling something of the needs of every dentist, and his paper, which cost him but very little trouble to write, did more good, provoked more discussion and received more commendation than Dr. Hinkin's paper and mine together. Why was this? Because Dr. Luthringer told us just what we wanted to know, showed how he did things, pointed out "Our Strongest Weakness" and told us the remedy.

Dr. Hinkins and I dealt with subjects which most of the dentists cared very little about. Dr. Luthringer hit us all just where we lived. In the Y. M. C. A. building is a fine gymnasium, fitted with the latest appliances for developing the muscles and producing healthy manly bodies for the growing young men of our city. When I have an idle hour I like to go down and see the boys exercise, and it is a delight to me to see the ease with which they do their stunts on the trapeze or bars, but how much good does it do my muscles to see the other fellows work?

Am I any stronger or more supple just because I look on and applaud? Suppose I come to these meetings and listen all the time and never do or say anything. Will the meeting help me very much?

I want to say something to the younger men. The younger the better.

About the year 1884 H_2O_2 was introduced by Dr. Harlan to the dental profession. I got some at once and began its use. As I was a member of the Peoria Medical Society at that time, I wrote a paper on H_2O_2, made some charts, giving the relative strength of different antiseptics and germicides and read it before the society. When the paper was read there was a solemn pause. Not a single man present had heard of H_2O_2 and no one was able to discuss the paper.

Finally one old man got up and told a story. He said that in Sunday school one day the teacher asked big LeLoy Snowden, who made him—and LeRoy couldn't tell. Little Johnny Nicol raised his hand at once and the teacher asked him the question, receiving the proper answer. "There," said the teacher to LeRoy, "aren't you ashamed of yourself, a big boy like you, not to know that God made you, and little Johnny knew it perfectly." "Well," said LeRoy, "he has a right to know, 'cause he is so little, God only made him a little while ago, and he aint had time to forget about it."

Now, if you young men who are afraid to write papers, because you fear the older members will criticise you, will only stop to think, you will see that there are a lot of things that are fresh to you, that the older boys have either forgotten or never knew.

Give us a paper on something that interested you in your last year at college, and see how many of those who have been in practice ten or more years, will sit with open mouths drinking in your words.

I am now one of the oldest in point of practice in the city, but I am free to say that the youngest graduate in the society can give me many a lesson which would be to my profit.

What I am driving at is:

First. It is the duty of each member of this society to contribute something to the general good of the society, and not be like a sponge, constantly absorbing and never giving out anything.

Second. It is not necessarily the unusual or hard things that we do which count most.

Third. That age and experience are not prime requisites. It was the children after all who placed the cap on Cheops.

PROCEEDINGS OF SOCIETIES.

REPORT OF THE CHAIRMAN OF THE CLINIC COMMITTEE OF THE G. V. BLACK DENTAL CLUB OF ST. PAUL FOR THE ANNUAL MIDWINTER MEETING, FEBRUARY 26-27, 1907.

BY DR. E. K. WEDELSTAEDT, CHAIRMAN.

Mr. President and Gentlemen:

It is out of all question for me to say what should be said about this meeting. To speak of the operations, the table clinics, the willingness of the men to demonstrate, the essays and discussion—all these things! The task is hopeless. I am unable, in any measure, to do the subject justice.

The interest manifested was so great, the attention devoted to every thing was in itself so worthy of special mention, to say nothing of the men who came from such great distances to attend. Well, I'll do my best.

Of Dr. Jackman who came from Cleveland, Ohio, and, unsolicited, assisted us; of Drs. Barnes, Reynolds and Williams, who came all the way from Seattle to not only meet with us but take an active part in our meeting; of the men from Missouri, Iowa, Nebraska, the Dakotas, Illinois, Wisconsin and Minnesota, what am I able to say? You did us honor, we were so glad to see you and to welcome you to the best of all our efforts.

The most sincere thanks from us all are due to Mr. J. T. Ingersol who so kindly furnished the dental chairs. We are under great obligations to Mr. David Perry, his manager, who arranged the clinic room and who worked so faithfully for the success of not only this clinic but those clinics which we have held in the years gone by; without the assistance of these two good men during the past five years we should not have been able to have held an annual clinic, therefore I say, "Thank you, gentlemen."

To the men on the clinic committee, Drs. Carlson and Wilson, also to Drs. Searl, Yerke and Gray I wish to return especial thanks. It's little wonder to me that now, two days after the clinic has closed, neither Dr. Carlson nor Dr. Wilson feels that he can ever think logically. What a mighty work these two men did really do—and it was a *mighty work*, too. All of us are greatly indebted to these two men for having the clinic as successful as it was.

How we did miss Dr. Brophy! He was sick and thus could not come. This is the first time for years that he has been absent from our annual meeting and he and his encouraging words we needed and missed.

Thank you, Dr. DeFord, for your efforts in assisting us to make this meeting successful. We shall not forget your kindness either.

There are a number of things in regard to the clinic which should be spoken of. To speak of them all is out of the question. At the present time two of them seem to arise before me more prominently than others. First. The coming to the clinic of Dr. W. D. James. He arose from a sick bed and his condition was simply deplorable. Yet he came and did his work. Such loyalty, such devotion and such honor a person seldom meets with in this world, yet what else could you expect from so good a man? And second. The absence of so many of those "fierce" cavities with which the men have been requested to deal at our other clinics. This year there were but two cases which came under my notice. The case upon which Dr. F. S. Robinson operated and the other, the one which Dr. Pherrin operated on. These were "bad."

There was such a joke upon me that I feel others should know of it. Dr. Pherrin was operating upon the mesio-occlusal surface of an upper right first molar. Now everybody who knows Dr. Pherrin, is well aware what a man of skill and ability he is, also how he is constantly studying conditions. After examining the cavity preparation I remarked that if it were my case, I should extend the cavity margins to the lingual and buccal marginal ridges. "So should I," said Dr. Pherrin, "provided there was an occluding tooth." Should a similar circumstance arise in the future I shall make it my business to ask questions of Dr. Pherrin and not do as a man recently said, "Rush in where the angels are afraid to go."

I do not feel that it is now necessary to be so explicit and speak of each operation. The intelligent men of the profession are well acquainted with your methods. The progressive clinics were carried out fairly well. The fact of having demonstrators aided most materially in this work. This is a new feature and I would suggest that it be adopted by all societies where operations are being made at such clinics as we have been holding.

Demonstrating certainly does relieve the operator of answering many questions, which necessarily must be answered quickly as well as tersely, whereas with a demonstrator these questions may be very fully answered. It is the means of saving much valuable time for the operator and that is a most potent factor so far as all are concerned.

The operations made by Drs. Searl, F. S. James, Gallagher, Clack, Richardson, F. S. Robinson, Fawcett, Lewis, W. H. K. Moyer, G. D. Moyer and Holden you are all perfectly familiar with, so why say more?

Dr. F. S. Yeager of this city also showed us that he knew something about porcelain which everybody did not know.

Our friend Dr. J. O. Wells of Minneapolis once more covered himself with glory by showing us what he could do with porcelain. 'Twas very nice to have both these gentlemen with us this year and I thank them both for their kindness.

The Iowa contingent, Drs. Booth, Cooke, Conzett, Pherrin and Woodbury were right in line and I am certain that nobody could tell the operations which they made from those made by the members of the club.

Dr. Pherrin always does manage to have about as difficult a case as it is possible to find. This year he showed conclusively that he could handle amalgam just as well as he could gold—a thing few operators are capable of doing—and he did make a most excellent operation. My! but that was a "fierce" proposition which he went against.

Dr. C. E. Woodbury of Council Bluffs, Iowa, came to us heralded as the only man in the dental profession who could make "perfect gold inlays," provided that such things could be made. Just previous to our clinic I had been in Chicago where I had the pleasure of examining a number of gold inlays, thus I was prepared to compare the inlay Dr. Woodbury might make with those I had already seen. In making the comparison one thing above all other's stood out very prominently and that was the cavity preparation. Nobody could have told in advance whether the cavity was being prepared for a filling of gold or amalgam. The same care was exercised in the cavity preparation as was everywhere witnessed among other operators who were making cavity preparations for metal fillings. This was something unusual for the gold inlays I have seen in the past—I reckon the curtain may as well fall here.

Dr. Woodbury certainly did make a most beautiful gold inlay. It was necessary to look twice at it before a person could tell whether it was an inlay or a gold filling.

Other men have very kindly reported some of the clinics and their observations of the meeting, so I shall leave it for them to tell their story.

REPORT OF THE CLINIC BY DR. C. N. JOHNSON, CHICAGO.

In the progressive clinics we saw demonstrations of two different classes of cavities, one a series of operations in the proximo-occlusal surfaces of upper molars and bicuspids by Drs. A. C. Searl, F. S. James, and J. W. S. Gallagher; and the other a series on cavities in the proximal surfaces of upper incisors and cuspids by Drs. A. C. Fawcett, C. H. Robinson, and J. F. Yerke. These clinics are reported in detail by demonstrators especially appointed for this purpose, so that it is unnecessary to make further comment on them at this time, except to repeat an expression made by a prominent eastern practitioner when referring to a similar exhibition made at the meeting last year. He said, "This kind of a demonstration means something. It means uniformity of method and system."

I had no opportunity to examine all of these clinics, but those I saw impressed me with the excellence of the work shown. As is always the case with these meetings there was manifest an earnestness and enthusiasm on the part of the onlookers and operators which speaks volumes for the interest in modern methods of practice.

REPORT OF THE OPERATION MADE BY DR. A. C. SEARL, OWATONNA, MINN.

BY DR. S. H. CHASE, OF MADISON, WIS.

A complex cavity in the mesio-occlusal surface of the upper right first molar was prepared in the following manner. A spear point drill was first used to cut through the enamel of the occlusal surface and then with the use of chisels, the remaining portion of the cavity was shaped with a flat gingival wall, the plane of which formed right angles with the cavity walls and longitudinal margins.

The step in the occlusal surface was finished in a like manner with flat pulpal wall.

No undercuts, grooves or pits were resorted to, and hand instruments were employed much more than the engine was.

In starting the gold filling in a similarly prepared cavity for a patient upon whom Dr. James had been operating three cylinders of non cohesive gold were first placed with hand pressure in the gingival portion of the cavity.

Next the step in the occlusal surface was filled with cohesive gold by the use of a small plugger and mallet, the latter in the hands of the assistant.

All through the operation greatest care was exercised in the stepping of the plugger, to accomplish perfect adaptation.

The plugger being advanced a step at a time toward the cavity margins, never retracting, but constantly advancing, thus forcing the gold layer upon layer towards the cavo-surface angle as a roller would do.

In finishing the filling for Dr. Gallagher's patient, greatest care was observed to retain the point of contact.

Inasmuch as there had been insufficient separation previous to the filling, it was necessary to retain as much gold at the point of contact as possible. To accomplish this the filling was burnished at that point and the remainder of filling finished with discs, strips and stones.

Notwithstanding his most thorough treatment of every step of this operation, Dr. Searl never forgot to be merciful to his patient. The ease with which each patient underwent every portion of the operation was evidence of the humanitarian methods regularly practiced by Dr. Searl, and this together with every other detail, which went to complete a most successful clinic, could not be too highly commended.

REPORT OF OPERATION MADE BY DR. F. S. JAMES, WINONA, MINN.

BY DR. T. F. COOKE, BURLINGTON, IOWA.

Dr. James' operation in the progressive clinic was the preparation of a cavity in the mesio-occlusal surface of an upper right first molar; the introduction of gold in a cavity in the disto-occlusal surface of an upper right first bicuspid, which was prepared by Dr. Gallagher, and the finishing of a filling in the mesio-occlusal surface of an upper right first molar, the original cavity preparation having been made at the clinic by Dr. Searl, and the filling made by Dr. Gallagher.

The clinic was designed to show the uniformity of methods followed by men who have been studying and practicing along certain definite lines. The results show conclusively that the desired end has been attained. The three operations, in each of which three men had a part, might well have been the product of one man's skill and that one man a master.

In Dr. James' preparation of the cavity one not acquainted with the Black methods of operating would doubtless have been impressed with the predominance of hand instruments over the engine. Seats were flattened, angles squared and margins planed with sharp chisels, the engine being used only where there was extensive cutting to be done. The finished cavity presented a series of straight lines, perpendicular walls and flat seats, the angles formed by the meeting of the horizontal and perpendicular walls being sharp and definite, no under cuts, no grooves and no pits.

Passing on to the cavity in the bicuspid prepared by Dr. Gallagher we find the same plan of preparation followed out, only applied to a bicuspid instead of a molar. Dr. James took two quarters and one half sheet of non-cohesive gold rolled into cylinders of such length that when one end of the cylinder abutted the pulpal wall the other projected from the cavity into the interproximal space. Placing one of the quarters in the bucco-gingival angle and the other in the linguo-gingival angle, he flattened the half sheet cylinder and slipped it between them forming a wedge. His assistant then applied the mallet with considerable force while he held his plugger at such an angle as to drive the gold toward the gingival wall. He then began in the step in the occlusal surface with cohesive gold using the same form of gold rolled into pellets of 1/32 and 1/16 of a sheet, building the gold over the floor of the step and continuing it over the non-cohesive foil in laminae, carrying out this same principle to the completion of the filling, always keeping his line of force toward the walls of his cavity so as to insure tight margins.

Dr. James then passed to the case begun by Dr. Searl, continued by Dr. Gallagher and now to be finished by himself. As stated above, it was located in the mesio-occlusal surface of an upper right first molar. After thoroughly condensing the ends of the projecting non-cohesive gold cylinders, a Black saw was introduced and carried up to, but *not through* the point of contact, then with Wedelstaedt files and Black knives the filling was trimmed to form and polished with gem stones, strips, discs and pumice. At the very last, a little separation was secured and a fine strip passed over the point of contact which polished the same. The finished operation was not only beautiful to look upon but should render the patient, during his life time, the greatest possible comfort and service.

REPORT OF DR. C. E. WOODBURY, COUNCIL BLUFFS, IOWA, PROGRESSIVE CLINIC.

It has been my pleasure and profit to have been the guest of your superintendent of clinics for the last two days. To see him operate is a revelation, to go into his home life is to know the man. In his professional life he is strong, aggressive and impulsive with ardent friends and bitter enemies. In his home he mellows into a dignified, genial, hospitable liver of the simple life.

To G. V. Black belongs the honor of originating and systemizing those things which we believe to be correct in regard to the filling of teeth. But without E. K. Wedelstaedt they would never have been known to the profession at large and to him should be given the credit of literally forcing them upon the reluctant dental profession. I can not begin the report of this clinic without doing honor to this great man who has made the dental profession of the northwest what it is.

The clinic I am to report was to have been operations in the teeth of three patients but owing to a delayed train only one patient was used. The cavity was in the mesio-incisal surface of an upper right cuspid. The incisal portion of the tooth was very much worn giving it more the shape of a bicuspid than a cuspid.

The cavity was prepared by Dr. W. R. Clack. It was a step cavity with the labial and lingual walls almost exactly parallel and at right angles to the axial wall. The gingival and pulpal walls were broad and flat. The labial and lingual extensions being carried a little farther than would have been ideal on account of the weak walls.

The cavity was filled by Drs. F. G. Richardson and F. S. Robinson (taking turns) with cohesive gold. This, as much as anything else, showed the system to which this work has been carried. These gentlemen being able to take up the operating of each other and carry it along without any inconvenience, using the same kind of gold and the same pluggers. I did not see the filling after it was finished but have no doubt that it was all that could be desired.

In watching the different operations the only thing that I have been able to see any chance to criticise is the apparently small amount of hand pressure used by some of the operators. I say, the apparent small amount, because I am satisfied that many are using more hand pressure than is apparent. But I am also satisfied that many could improve their operations by using more hand pressure in combination with the mallet pressure when condensing the gold. I want to also mention the stepping of the plugger. I think that upon this as much as any one thing, depends the results of the operation. You all step your pluggers properly but when talking about your operations you very seldom mention it. Therefore I say when you are telling others how to make gold fillings, place greater stress on the proper stepping of the plugger.

Gentlemen, I am proud to have had the opportunity of watching the clinic and of making this report to you.

REPORT OF OPERATION MADE BY DR. W. H. K. MOYER, LITTLE FALLS, MINN. BY DR. J. V. CONZETT, DUBUQUE, IOWA.

Dr. Moyer's operation was a filling in the bucco-occlusal surface of a lower left third molar.

The first and second molars had been extracted, consequently the tooth had moved forward and thus it was slightly tipped, making a very strong occlusion upon the disto-marginal ridge, where a well marked wear was observed. There had been an amalgam filling in the occlusal surface which had been so made that it was very difficult to make a perfectly flat seat without a great deal of tissue destruction which Dr. Moyer wisely decided not to do. As nearly as possible, under the circumstances, the cavity was prepared with a flat pulpal wall and parallel walls. The buccal pit being involved, the cavity was extended so that that portion of the tooth was also included. In preparing the cavity, hand instruments were largely used, aided by burs in the right angle attachment in the engine. In making the filling ½ sheet cylinders of non-cohesive gold were used. They were placed on end around the cavity and one cylinder placed in the buccal groove. This made a cavity lined with cylinders of non-cohesive foil completely around the axial walls except where the cavity in the occlusal surface joined that in the buccal surface. Into the space left in the middle of the cavity and extending over the buccal surface cohesive gold was condensed and when the cavity was filled the whole surface of the gold was thoroughly malleted to place. The filling was finished with stones and finishing burs and it was beautifully polished.

Dr. Moyer made a filling that was not only a perfect filling from a utilitarian aspect, but one which was a work of art as well.

REPORT OF CLINIC—SECOND DAY.

DR. W. T. JACKMAN, CLEVELAND, OHIO.

Mr. President and Members of the G. V. Black Club:

It gives me much pleasure and gratification to have the privilege of meeting with the Black Club at this your tenth gathering. This, however, is not the first time I have seen members of this body operate. Two years ago, at Buffalo, at the meeting of the national association, I well remember what a furore you created by the beautiful operations you made at that time; also last year at a meeting of the National at Atlanta, Ga., like results were obtained—an inspiration to any progressive dentist who wants to make the best possible operations for his patients.

Like splendid clinical results obtained here yesterday and today, together with the excellent papers read, makes this, to me, one of the best dental meeting it has ever been my pleasure to attend. Why, Mr. President, that paper of Dr. Black's, as illustrated, is well worth going across the continent to hear and see. To say that I feel many times repaid for coming so far to this meeting is to put it mildly.

This club, I believe, courts criticism, therefore I offer but one, and make it in the kindliest spirit, as I just said, your operations are beautiful, but are made at too great a cost in human suffering—especially so in the light of the fact that all your cavity preparations can be made in a way to give little or no pain. Down in Cleveland we are everlastingly preaching the doctrine of painless dentistry. In fact we go so far as to claim that no man has any moral right to cut into a sensitive cavity without having first desensitized that cavity; especially is this true when we have such an efficient means for accomplishing this end in the Myers obtunding instrument. I am happy to here state that Dr. C. G. Myers, of my own city, is the original inventor of the method and instrument I refer to. Before coming up here I wrote that genial, big hearted and lovable gentleman, he who made the G. V. Black Club possible, Dr. E. K. Wedelstaedt, that I did not care to act wholly as a sponge, but would, in turn, try to give a little good for the great benefit I knew I should receive. I therefore offered to desensitize some cavities for the patients of the clinicians, using the Myers obtunder. This I did to the entire satisfaction of the patients, and I thought to the satisfaction of the clinicians, but, Mr. President, this meeting is about to adjourn, and I confess that I am somewhat disappointed at not hearing a word from either of these gentlemen relative to what I did for their patients. I am especially disappointed in not hearing from Dr. J. V. Conzett. His patient stated that the reason he had neglected his teeth was because of their hypersensitiveness—simply could not endure having them prepared. In a few minutes I had the tooth perfectly desensitized, the doctor went ahead and prepared a large cavity in the mesio-occlusal surface of an upper right second bicuspid—a la extension for prevention. The young man said the doctor did not hurt him at all. I did not give him more pain in making the pit for the instrument than the mere prick of a pin. Now, gentlemen, we enthuse over results of that kind, down in our neck o' the woods, and our patients are infinitely more delighted.

This is not an instrument whereby we get a perfect result one time and fail the next, but when you know how to use it the results are uniform. Recipe: 2 per cent solution of cocaine, a little common sense mixed with your educated sense as dentists, together with the Myers or some other good instrument, and you must succeed.

Mr. President and gentlemen, I have already spoken too long. I thank you for your attention.

Here's to the joy of our patients by the practice of less painful dentistry!

DR. J. O. CONZETT, DUBUQUE, IOWA.

The reason that I have heretofore said nothing about the beautiful demonstration of Dr. Jackman is because Dr. Rawlings in reporting my clinic reported the success of Dr. Jackman's operation in desensitizing the dentin, and furthermore, when upon my feet reporting Dr. Moyer's clinic I simply forgot to mention Dr. Jackman's. It was not because I was not entirely interested, nor was it because

I had any criticism to offer concerning it. It was simply neglect for which I now offer the Doctor a humble apology, for such a demonstration certainly deserves recognition. The patient's tooth was very sensitive and I apprehended a difficult time with the patient in filling it, but after Dr. Jackman operated, using 2 per cent cocaine and injecting it with the Myers Obtundent Syringe, I cut as freely and as fully as I desired without causing the least pain. I know nothing of what the after result will be, but Dr. Jackman assures me that after three years' use he has yet to know of a single after effect. That is good enough for me and I shall try the method and the instrument.

REPORT OF OPERATION MADE BY DR. BOOTH.

BY W. E. HARPER, CHICAGO, ILL.

Clinician, Dr. C. N. Booth of Cedar Rapids, Ia. Operation—A cavity in the mesio-occlusal surface of an upper right first molar.

The cavity outline was cut well to the buccal, lingual and gingival, with short gingival angles, meeting all the requirements of extension for prevention.

The occlusal outline allowed ample retentive form and the grooves were cut to a point where a perfect finish of the margin might be made.

The enamel walls were well prepared, appearing clear and clean, and on the occlusal, well supported by dentin.

The resistance form of the cavity was perfect, flat gingival and pulpal walls, with angles in the dentin well squared out.

The cavity was filled with gold. About four cylinders of non-cohesive foil were used to cover the gingival wall and margin; the remainder being made with cohesive gold. The general method of gold building was by the stepping method, stepping the plugger point from the center of the filling toward the wall, wedging the last gold condensed between the wall and the gold previously condensed, the most certain method of securing perfect adaptation in such cavities.

The filling finished up perfectly with a contact point such as would insure comfort in mastication and cleanliness.

I have every confidence that the filling will prove a credit to the operator and will serve the patient as long as the tooth will otherwise last.

REPORT OF OPERATION MADE BY DR. T. F. COOKE, BURLINGTON, IOWA.

BY G. S. TODD OF LAKE CITY, MINN.

This clinic consisted of preparing and filling with gold a cavity in the mesio-incisal surface of an upper left central incisor.

The cavity was prepared in a very scientific manner. The gold was started in a convenience pit in the bucco-gingivo-axial angle and built across to the labio-gingivo-axial angle thus covering the entire gingival wall.

Cohesive gold was used throughout the entire operation. A small, almost straight, plugger was used from start to finish, much care being exercised to step it so that the gold would be thoroughly condensed and wedged against the margin.

The finished operation was a beautiful piece of work and showed clearly the ability of the operator.

REPORT OF OPERATION MADE BY DR. J. V. CONZETT OF DUBUQUE, IOWA.

BY G. A. RAWLINGS, BISMARCK, N. D.

Operation—Right upper second bicuspid, mesio-occlusal surface. Gold filling.

The patient being exceedingly timid, Dr. W. T. Jackman completely anesthetized the dentin by injecting a 2% solution of cocaine with a Myer's syringe.

The cavity preparation took but a short time, chisels and inverted cone burs being used. The gingival wall was broad and flat, the step in the occlusal surface was flat and the whole slightly retentive, the enamel margins were carefully beveled.

Quarter sheet cylinders of non-cohesive gold were first placed in the gingivo-axial angles, then a half sheet cylinder was placed between the first two already placed. These were condensed with a large plugger one and one-quarter mm.

The cohesive gold was started in the step in the occlusal surface, using $\frac{1}{16}$ sheet pellets condensed with a ¾ mm. Wedelstaedt plugger which was stepped from the center toward the margins thus obtaining perfect condensation and adaptation.

The finishing was done with a Pherrin swedger, a Black number 8 knife, a gingival margin saw, Wedelstaedt finishing files and completed with discs used in a right angle hand piece for buccal and lingual margins. For finishing the filling in the occlusal portion, gem stones and strips in mandrel were used.

The contact point was left untouched by strips or disc during the finishing, it being burnished with a fine bladed knife making a small contact point.

All the details of the operation were carefully observed and accomplished with such ease as to cause general comment.

The finished filling was an ideal one.

GOLD INLAY BY DR. C. E. WOODBURY, COUNCIL BLUFFS, IOWA.

REPORTED BY DR. CLACK, CLEAR LAKE, IOWA.

Dr. Woodbury prepared a cavity in the disto-occlusal surface of an upper left first bicuspid.

An old amalgam filling was first removed and then the rubber dam was adjusted the pulp was not involved. In preparing the cavity the gingival wall was cut so that it was flat and at right angles to the line of stress. The lingual and buccal walls were parallel and at right angles to the gingival and axial walls. The step in the occlusal surface was prepared along the same lines.

An Ivory matrix was then applied and the cavity filled with pink base gutta percha for the double purpose of testing the cavity for under cuts and to be used later as a male die to fit the matrix more perfectly. 1-1000 platinum foil was used for the matrix and it was fitted in the usual way with cotton balls and the gutta percha male die, already spoken of. Moss fibre gold was now packed into the cavity. The gold had a specific gravity of 5 or 6. Twenty-two-karat gold plate was then flowed on the moss fibre gold and the inlay contoured to the required shape. Afterwards it was cemented into the cavity using Ames' brown inlay cement.

When finished the operation was most artistic and it should be most useful.

REMARKS MADE AFTER THE READING OF DR. BLACK'S PAPER, AND HIS DEMONSTRATION BEFORE THE SOCIETY.—DR. K. E. CARLSON, ST. PAUL.

To ask what effect Dr. Black's paper had on one personally, and on the profession at large, is one that could be answered in volumes or in few words. But to draw from Dr. Black's own method, the fewer the words, the better.

Many men write from funds obtained by research, others from a general observation and most from a pure garrulousness that is inborn in them. Of the latter type the dental magazines are full; but those of the first may be counted on the fingers of one's hands and of these Dr. Black may, without much discussion, be placed at the head. He is a man personally unostentatious, dignified, simple and kindly and his own personality is reflected always in the dignified papers that are never tainted with rancour. With his personality and his papers he has made a straight and easy road for the dental practitioner that heretofore was one full of ruts and pitfalls. He has a natural endowment for his work which insures a mastery not only in the theoretical procedure but in the practical application. This intercourse between laboratory researched and the practical workings at the chair has been slight, we might even say there had been none until the advent of Dr. Black—for he was the first to unite both lines of work under a broad point of view.

For us humble practitioners the better conception we have of theoretical ideas, the more it will aid us in our practical work. The paper last read to us, while it may not be so important as many that have gone before, is one of those finely carved details that go towards the making of a grand architectural whole, which we hope some day will be summed up in a volume called, "Dr. Black's System of Operative Dentistry."

DR. E. S. BARNES, SEATTLE.

It seems fitting that the man who placed cavity preparation on a scientific basis should also put the placing of the filling material in cavities upon an equally broad foundation.

Of course, this investigation assumes filling material such as gold, but with fundamental principles established, a very slight elaboration might apply with an equal value to amalgam. It seems to me the results of these ten years of work spent in the investigation are correct; not only correct but possible of every day practical application. How many poor wounded irritated peridental membranes, with all the attendant sequalae, of the present and future generations, if they could, would be sounding their praises to the man who had brought them salvation.

These investigations are fraught with so much of the practical as to make them of vast importance to every one of us by establishing, as they do, the scientific basis for a proper placement of filling material.

The necessity for correct cavity preparation, contour of filling, contact point, interproximal space have all been pretty well established and to the conscientious dentist, the man who is honestly endeavoring to do his best and to know the best to do, they are being pretty generally understood, and practiced along very definite lines. Now comes this paper to establish on a scientific foundation the placement of filling material to obtain maximum results with a minimum of injury to surrounding tissues.

The points of the paper that I particularly notice are the blow, the material, area of plugger points, condition of peridental membrane, resiliency of dentin and anvil tone.

The most of these points are taken care of in the table which sets forth results of these experiments. As this will be published there is little need in my discussing the same.

My personal thanks I extend to the man who has given me so much to think about. I know that the gratitude and appreciation of the members of this club are his. I cannot help feeling that Dr. Black's greatest renumeration will be in our making a study of this paper till we comprehend it and applying the results in the service we give our patients.

TABLE CLINICS.

Dr. G. V. Black, Chicago, Ill.—Manu-dynamometer.

Dr. J. E. Argue, Red Lake Falls, Minn.—An instrument for equally distributing and removing mercury from a mass of amalgam.

Dr. W. N. Murray, Minneapolis, Minn.—Original method of securing and holding loose teeth in position.

Dr. C. A. Steuerwald, St. Ansgar, Iowa.—Method of casting gold cusps for crowns.

Dr. S. H. Chase, Madison, Wis.—A table clinic, demonstrating with the aid of typodont a method of making gold shell crowns. The band is cut along the arcs of two circles whose radii form the ends of the band. The arc of the smaller circle represents the root measurement. A steel die which imitates the natural contour of the buccal surface of tooth is stamped into the band, using lead block for counterdie. The band is then soldered and the cusps carved in the usual manner. The advantages claimed for this method are: Perfect points of contact by virtue of the bell-shaped crown, and perfect contour produced by the mechanical stretching of the gold by the die. Accuracy of detail, esthetic qualities and ease of manipulation are also claimed for this method.

Dr. C. N. Johnson, Chicago, Ill.—Methods of cavity preparations.

Dr. W. D. James, Tracy, Minn.—Bonwill method of arranging and grinding artificial teeth.

Dr. J. B. Ridout, St. Paul, Minn.—Original method for obtaining correct occlusion.

Dr. H. J. Hansen, La Crosse, Wis.—Original method of adjusting rubber dam and value of Hansen clamp.

It is absolutely a physical impossibility for me to write any more. To tell of the great work accomplished by these different men is out of the question. They worked until they were half dead and some of them talked until their voices gave out, and they were compelled to stop. This tells all that anybody needs to know.

I know of few things that would give me greater pleasure than to enter into a comprehensive discussion of these table clinics, I know that it is my duty to do it—but I am so nearly dead from all this heavy work that *I cannot do it.* I beg the pardon of each of the table clinicians who came to our meeting and who did so much to make the meeting successful, for my action but I am just like other people, I am only human and thus am only able to do so much. Long since, the "so much" mark has been passed and still there remains more to be written and worse luck still I must write it.

And now for the essays. In reality they were most delightful. Never in the history of advanced work in this section of the country did we have the like. Not in years to come do I expect again to hear their like. From the opening day, when Dr. W. H. K. Moyer began reading his essay, until Dr. Black closed the discussion of his own essay on the second day, was it anything else than treat after treat and of a nature also that would please almost anybody.

Dr. Moyer's essay was just like himself, clean, clear cut and logical. Would that I had that man's ability "to," as Dr. Searl says, "so place words that they would jingle so nicely." His essay tells a far better story than any words of mine.

Dr. Carlson followed him with an essay that does not tell of the hours and hours of work which he spent in accumulating the data therein contained. Dr. Carlson, like Dr. Moyer, is very much in earnest and that tells all. The profession will soon hear from these men.

And then came Dr. T. F. Cooke with his sermon, so delicious, so pleasing and so happy in all ways, just like the genial doctor. Verily it was a treat to hear him. And then came the man whose essays we all enjoy for he has proved himself our friend, Dr. C. N. Johnson, our assistant and co-worker. And this closed the first day's session. If all of us who worked were not tired—well, then we do not know what that feeling means.

And on the morrow we heard what the master of us all had to say, Dr. G. V. Black. The results of his conclusions were a revelation. It would have been impossible to believe any such statements as he made unless he proved what he said. And he proved every assertion he made.

As I sat there listening he reminded me of one of those historical characters who is known as a 'sage." He spoke words of wisdom to us, he pointed out wherein we were weak, how we could, if we wished, strengthen ourselves and thus be of greater use in the affairs of the world. Verily that is a wise man whom we do not appreciate to the extent which we should.

His essay has been reviewed by Drs. Carlson and Barnes and I am so tired that my pencil moves too slowly for the words which I wish to write and should write.

God bless Dr. Black and may he be spared to us for just so long a time as he desires to live. But may he find peace and comfort in the autumn of the busiest life I am familiar with. May everything good come to him and to you all for your willingness to come and assist us in spreading the gospel of advanced and progressive dentistry.

[Note: This report was written in greatest haste and it should be rewritten, but I am so busy that I cannot find time in which to do it. Every apology is hereby offered for it and all charity asked.]

THE CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held Feburary 19, 1907, with the president, Dr. Hart J. Goslee, in the chair.

Dr. Edward C. Kirk, of Philadelphia, read a paper, by invitation, entitled "The Vital Side of the Dental Problem."

DISCUSSION.

Dr. C. N. Johnson:

I do not think we will find it very difficult to agree in the main with the statements that have been laid down by the essayist this evening, and I shall refer only to a few questions he has raised.

In the first place, I am greatly in favor of the broadest possible point of view in the consideration of any question in dentistry. I have often made the remark that there seemed to be connected with the practice of dentistry a tendency towards narrowness, and if the essayist has emphasized anything tonight, it is the idea, as I take it, that it is narrowing to the dental profession to emphasize mechanics to the exclusion of other things that are of a more scientific trend. No man, who limits his ideas simply to the mechanics of dentistry, can be considered a broad man; and yet to ignore in any way the mechanics of dentistry as a very important factor in a man's ability to serve the public is a fatal error, because his best service to his people is based largely on his mechanical ability.

The essayist spoke of dentistry in the light of restoring lost function. Of course, if we would restore lost function, we must be able to recognize the significance of that function in the first place; but from the nature of our calling to restore lost function, we must have this mechanical ability.

His comparison between the excellence of mechanics, as exemplified by the blacksmith, the jeweler, etc., and the mechanics of the dentist, it seems to me, is hardly fair, because there is a slight distinction. We should place dental mechanics on a higher plane than the mechanics to which he has referred. Dental mechanics in its consummation deals directly with the human organism, and that places the mechanics of dentistry on an infinitely higher plane than the mechanics of the jeweler, the blacksmith, etc.

I did not have an opportunity to read Dr. Kirk's paper in detail before it was read by him. If I gather correctly from the paper, however, the inference was made that until we had a knowledge of the vital forces at work in the phenomena of dental caries, we were unable to perform good operations for the purpose of saving human teeth. If my impression of what the essayist said in regard to that is correct, then I would take issue with him slightly, because long before the question of bacteria entered into the question of dental decay, mechanical operations were performed for patients by virtue of which human teeth were saved for a quarter or half a century. Good dental service was given to the public long before the recognition of the vital forces of bacteria as an agent of dental caries. Men get impressions which may be called empirical, but which after years of clinical experience will teach them how to perform operations, not so intelligently perhaps, not with such good scientific reasons, but operations which will do good service on the basis of the experience of the operator. It is well for us to learn the cause or causes of disease, because then we can treat a disease more intelligently, but even before we knew the cause of dental caries, we were able to be of service to the public.

Again, I have a feeling of greater optimism in regard to teaching in dental colleges today than the essayist. It seems to me, if there was any time in the history of dental education, it is now, when the educators of our country are acknowledging and are recognizing the necessity for the broadest possible point of view in that education, and I believe our curriculum today takes cognizance of that fact, and we are teaching those things that the essayist has called the vital factors in dental education to a much wider degree than ever before in the history of dental education. The development of recent years will point that out most emphatically. We are teaching our students anatomy, physiology, chemistry, bacteriology, pathology, etc. We are teaching those branches to an extent that there is frequently a complaint on part of the students that we are making the curriculum altogether too wide. In fact we sometimes grind our students past the limits of human endurance when they cover the entire curriculum.

In conclusion, I want to express my great appreciation of the fact that we have had Dr. Kirk here this evening. As he told us tonight at the dinner, it is like coming home to him when he comes to Illinois. We are always glad to welcome him to Chicago, because he always brings us a message which sets us to thinking.

I regret that I was not able to see the paper in order to make adequate notes to cover the essential points he brought out in detail, as I should have done, in justice to him.

Dr. Don M. Gallie:

I am sure Dr. Johnson and myself speak for the society when we say that it has been a great treat to listen to the reading of this paper. It has been said that Dr. Kirk is a product of Illinois, that he is a sucker, that he had gone east, had benefited by his experience, and then came back to us a bigger and broader man. There is no doubt but what he has been benefited by his opportunities in the City of Brotherly Love, at the same time I feel that the City of Brotherly Love and the whole profession have been the gainers by having the benefit of his knowledge and scientific work.

Dr. Kirk this evening has given us something to think about, he has given us a paper a little broader than the usual papers presented before dental societies. We have been interested, we have all been instructed by having for instance a paper on cavity preparation. We have been greatly benefited by papers on pyorrhea alveolaris, and root canal fillings, immediate or otherwise, but when we listen to a paper that gives us an insight into the larger realms of dentistry, I am sure that we all feel that it is an occasion we will long remember.

Tonight we have heard something more than digging into decayed teeth, or filling putrescent pulps, or manicuring diseased roots. This paper should stimulate us to look into the cause and effect of diseases of the mouth, as well as their cure, and the restoration of their normal function. This is an age in which a man does not believe everything you tell him. We have got to show him. It is not a question of Dr. So-and-So says so. We are not satisfied when a man says that this is a case of pyorrhea or of alveolar abscess; we want to know something more about it. If possible, we want to know the cause of it. And so it is with dental caries; we have got to know something more than simply another man's say-so; and Dr. Kirk encourages you and me to look into this matter a little deeper, and go still further than to simply remove, as it were, the visable effects.

It must be gratifying to the dentists of Chicago to hear the very pretty tribute he paid to those who are doing scientific work in this city. We can return that compliment, because he comes from a city that is doing its share toward settling the vital points in the great dental problems. There they have their Cook, their Black, and their Buckley in the shape of Dr. Kirk, Dr. Broomell, to say nothing of all the great men who have come and gone before them.

These gentlemen come from a city that can hold its own in everything that pertains to the best in dental education.

It is true, we must be something more than imitators; or mere artisans; or diggers into dental literature, and into the cause and effect of disease, if we have a proper conception and knowledge of the troubles we are to relieve. And so, first of all, we should know something about the cause, and effects of disease. But we must not stop there. We must be able to restore teeth to usefulness, and we can only do that by being mechanical experts. We cannot very well divorce the two. We cannot be as useful as dentists by simply being mechanics or artisans; we must be scientific, and the work that is going on today and the papers we hear frequently are doing a great deal toward that end. The younger men in all sections of the country are being stimulated; and so the time is coming when we will have a broader field, and when that time comes, our sphere of usefulness will be greater; we will have men in the profession who will do good scientific, original work; which will entitle them to a place among the learned members of the profession. When that time comes, (and it is not far distant) I do not believe that a three-year course of thirty-two weeks will be sufficient; but at present, if we will make use of these three years, and see that the students are kept busy; see that they are inoculated with a virus that will stimulate them to prosecute their studies diligently, and study after they get beyond the college wall, it will only be a short time before we will see the fruits of our endeavors. We will have men who know something about the cause of decay of teeth, and the reasons for extending our margins into areas of immunity. We will know something more about pyorrhea than the manicuring of roots and scraping off deposits from the teeth. We will know the cause of these conditions. I have a hopeful view of the future, and believe that we are not going to be put in the same class as blacksmiths, carpenters and plumbers, because, as members of a learned profession, we will not only understand the cause and effect of diseases, but the cure of them.

Dr. C. E. Bentley:

It is no idle play upon words when I say that this paper has afforded me a greater amount of satisfaction than any paper I have heard read within these walls for a good while. I say that is no idle compliment, because of the fact that Dr. Kirk has voiced what has lain dormant in my mind for many a day, and to which I have given utterance now and then in a vague sort of way in dental associations. The essay is a classic in its line, and I mean exactly what I say. It has systematized and organized the thoughts that have lain dormant in a great many minds here tonight as to what the full complement of dental education and dental requirements should be for a well-rounded dentist.

First of all, I like his definition, which says that mechanics are nothing more nor less than a means toward an end. I cannot quote it verbatim, but in substance that is it. It is a means toward an end, just as quinine is a means toward an end when it is scientifically employed to eliminate the poison of malaria; just as antitoxin is a means toward an end when it is scientifically used to neutralize the ptomaines of the diphtheria germ. If this be true, we can accept the definition of the essayist, which is the most complete I have listened to. If mechanics is a means toward an end, it is but one of the elements of our profession. It is the superstructure built upon the basis of something else, and that something else is scientific knowledge. All practical knowledge becomes absolutely useless unless it is founded upon scientific principles. Dr. Marshall Webb practiced extension for prevention without knowing consciously what he was doing. It took the organizing ability of a G. V. Black to organize that into a system; that gave us the only scientific system upon which and with which we fill teeth scientifically today.

I noticed that the men Dr. Kirk has chosen to place the laurel wreath upon tonight, who are residents of Chicago, are men who have been delvers in scientific lore, and have given to us the results of their scientific researches. In proportion as we have done that, has our profession been recognized to be of scientific worth. The treatment and deodorizing of putrescent pulps, and the bleaching of teeth have been scientifically demonstrated, according to what Dr. Buckley and many others have given us. The essayist has mentioned the name of Dr. Buckley, and I mention him in turn, and as a result of his work he comes in for plausible and complimentary mention. Dr. Cook has gone out to the slaughter house and taken sheeps' heads and hogs' heads and brought with him a bucketful of teeth, experimenting with them for scientific purposes, (when the rest of us were making dollars), hunting for the source of pyorrhea, and while he may not find anything strikingly new, his scientific work along this line may prove that this disease is of the kind which he states. Dr. Hinkins has delved into the chemistry of dentistry; while Dr. Talbot, whether you agree with him or not, has done a great deal of scientific work, without any hope of reward, and has given to the world a great deal of scientific lore, and I have no doubt some day he will be given great credit for knowing something about that dreaded disease, pyorrhea. As to Dr. Black, we have only to mention his name here to know what he has done. Those are the men that Dr. Kirk has singled out in Chicago as worthy of special praise, and those are the men who have signalized their efforts and good work by delving in scientific lore, while you and I have been working at the chair, trying to apply their principles. Everything we put into practical use and apply at the chair must be grounded on scientific facts, and unless it is, it is not good science, it is not good practice. Therefore, I say, this utterance to me is significant because it will give to the younger men an impetus, and make them more interested in that uninteresting side of our profession. It is significant because it will practically attract to our attention men in the collateral sciences, particularly the medical profession, for in proportion as we are demonstrated to be scientific and tried by our practical worth, will we get that recognition for which we readily clamor.

Dr. George W. Cook:

Dr. Kirk, as Dr. Bentley has said, seems to have crystallized in his paper the thoughts of many who have felt for a number of years that someone, at least, should bring out the fact that we must broaden the horizon of dental education. He has given us an excellent and concise definition of the question that is constantly being brought up for discussion, namely, What is dentistry? What is its function? Is it mechanical solely? Does it have a vital aspect? The very men whom we look upon as the most practical in our profession, and who are constantly priding themselves as practical dentists, are the ones whose ideas have been gathered from different scources before they have put them into practical use. How did they get them? It is said that Dr. Oliver Wendell Holmes, when taken to task for plagiarizing someone's words, replied that "every word I have spoken or written in all my life has been spoken and written centuries before." So it is with the majority of things we are utilizing as practical means of restoring lost parts of teeth in the oral cavity, and for a function which is most vital in the human economy, namely, the preparation of our nutrition so that food can be assimilated. We cannot understand the true value of the mechanism we are constructing unless we know something about the vital problems that underly the whole subject.

Dr. Johnson has pointed out that the mechanical part of dentistry is higher than that of the mere blacksmith, lockmaker, clock tinkerer, or jeweler, in that we deal with certain mechanical appliances for the purpose of sustaining human existence. Yes, that is true, but how little have members of the profession of dentistry thought of the maintenance of that existence? How little have they thought of it as a means for which they were striving to gain an end?

I am glad that this paper has come to us in this way and from the source that it has for two reasons: First, it gives it some authority. If the paper had come from me, from Dr. Buckley, or some other man whose name has been mentioned by Dr. Kirk, the members here would have said, "Poor fanatic, he is off on that subject again." (Laughter). We talk about these things so much at breakfast, at dinner and at luncheon, that you have gotten to think we dream about them. Well, perhaps, Dr. Buckley did dream of his solution to go into a putrescent pulp. (Laughter). Possibly he did. But there is something back of that; the thought was there long before he suggested it. He worked it out, and perhaps there were many things he gathered in to make this thought possible to him. Upon those phases we have to educate dental students. I think our three-years' course of thirty-two teaching weeks of dental college education is plenty. What we need is teachers in our dental colleges, men who are earnest and sincere, who give considerable attention to the subjects which they teach, and are willing to stay up at night once in a while to get their lectures ready. That is what we need. There is not sacrifice enough made on the part of those who pretend to teach, and it is very largely a pretense. Men are not willing to make a sacrifice; perhaps they cannot always do so. That is one of the problems of dental education. One of the vital things is the means to do it with, and then the next thing is a man who is willing to do his work honestly and sincerely, and in order to do it he must fully prepare himself to teach students either in the lecture-room or laboratory. We have got plenty of time to do this. Our students do not have any more courses nor do they have to work any harder than students in other scientific schools. Perhaps a few of them do. Those who come in under the suspicion that they have not received a good preliminary education may have to work a little harder. But, all things considered, we have time enough to give a good education to a good student if the teacher is a good man, a hard worker, and he has a pleasant place to work in. Such a teacher can do a great deal more than the larger bulk of the profession is willing to manifest in the discussion of problems regarding dentistry.

I want to thank Dr. Kirk again for coming out here and giving us this excellent, this scholarly paper, and as he really belongs here, I hope he will prepare another one very soon and visit us again, and as long as he has to go east to get his inspiration, I sincerely hope he will become inspired again.

Dr. J. P. Buckley:

I believe I would be untrue to the principle which I hope governs my life, if on this occasion, I did not publicly acknowledge that it has been the reviews and the fair just criticism by Dr. Kirk of what little work I have done, that has made me hew closer to the line. Dr. Kirk has been the one man of all others who has seen fit to criticise my work, that has induced me to try to base what little work I have done on scientific facts.

I am only going to refer to one thought which I have gleaned from the paper, and which I am surprised has not been emphasized by those who have discussed it thus far. Dr. Kirk has told us that which we knew, that Miller gave us the theory of the decay of teeth; that Black gave us a system by which we can prepare our cavities so that fillings will last longer. Now, if we would take advantage of the points embodied in Dr. Kirk's paper, and carry out the teachings of that enthusiastic, boastful and at times, obnoxious, but nevertheless, generally correct advocate of oral prophylaxis (I refer to Dr. D. D. Smith of Philadelphia), since we know that Miller and Black have given us, the sooner we will be rendering better service to our patients.

I am going to say one thing further, with regret. I regret that there is a lack of appreciation on the part of such a large percentage of the members of the dental profession of scientific work. I want you to understand me correctly. When there is developed and given to the profession something which is practical and that can be used, all appreciate it; but I do not believe many will search out the articles and read them from beginning to end, that are of a scientific nature, and appreciate them to the extent that ought to be done. Most dentists are ever ready and willing to read about those things which strike them as being practical; and I hope that a greater number will take an interest, in the future, in the vital side of dentistry, which Dr. Kirk has seen fit to emphasize tonight.

DR. J. E. HINKINS:

If I had a clear understanding of what Dr. Kirk said in his paper, he stated that we could not hope to have a learned profession by mechanical excellence alone. Was that the trend of your paper, Dr. Kirk.

DR. KIRK:

Yes.

DR. HINKINS:

I agree with what the essayist has said, and I trust that the few remarks I am about to make will be germane to the subject.

I happen to be familiar with the inside workings of the Quaker Oats Company, the National Biscuit Company, and of the treating of wood. It is a fact that among those who are engaged in commercial pursuits, if a man comes in with a chemical compound or mixture, and wants to sell that to one of these corporations, he is referred, first, to the purchasing agent. He goes over it carefully with this party. The purchasing agent says to him, "I will see you again." He then takes his samples, and what does he do? He goes to the scientific man; he goes to the man with the microscope, with the micropolariscope, the spectroscope, and chemical laboratory, and after these specialists have gone over the compound or mixture, and stamped on the back of it O. K., then the man can come with his chemical combination ready to do business with the firm, because they are ready to put up their money. But they will not put up their money until the thing has been O. K.'d by the scientific men. It appeals to me, that if men in those walks of life have got to have their work endorsed by scientific investigation, is it not doubly interesting to us as dentists, who operate on living tissue, that we should have our work equally corroborated by scientific men, so that we can advance scientifically as fast as we advance mechanically? I would like to go on talking on this subject, but I am not a good speaker. I am very much interested in this paper, and have thoroughly enjoyed it. If you will pardon me, with your permission, I will give you an account of the work I have been doing this winter along the line of nutriment or nourishment.

Having made the acquaintance of Dr. Wiley, my attention was called to this some time ago, and being somewhat of a farmer, it occurred to me that it would be interesting to do some work along the line of testing cold storage products. The first thing I took up was eggs, having some fresh eggs and some cold storage eggs, some of the latter having been in cold storage for about five months. I made some slides of both, examined them, with low power, and after looking at them for some time I made use of the polariscope to look at the crystallization, and found that the contents of these eggs were different. I said to myself, I must either not be bacteriologist enough to tell what makes the difference in these eggs or there must be something wrong with my eyes. I found that my eyes were all right. I spent many hours at nights before I got through looking at these eggs. I placed them in an open dish, and the next evening went over them again. I found in about twenty hours that a fresh egg began to take on pretty nearly the same form as the cold storage eggs did at first. I then began to see the reason why the eating of such eggs would have some effect on nutrition or nourishment. From studying eggs, I went into the vegetable kingdom; I took fresh vegetables and made slides of them, and examined them carefully. Some of these vegetables were pulled up from the ground. I then procured some other vegetables from a grocery store that were five days old, and I could see a decided difference in the cell formation. Then I took cold storage apples and fresh apples, and tested them. So I have done a good deal of work along that line, both for amusement and for obtaining information along the line of nourishment; and since Professor Wiley has made his report, I am inclined to think that much of the decay of teeth comes from the food in cold storage which is in the first and second stages of decomposition.

Furthermore, I do not believe we get the proper assimilation of such foods, and that lots of the trouble in our patients is systemic if we can only get at the cause.

Dr. Fred B. Noyes:

I have been much interested in Dr. Kirk's paper, because it was broad and appealed to the larger conception of the dental profession and of dental practice. The essayist in his paper stated clearly that practice upon an empirical basis precedes a rational basis; that men in every walk of life, since history began, have done things before they knew why they got the results, and when they found out why they got the results, they modified their practice and did better, and because of that the essayist appeals to us as a profession to become more interested in those things which will make our practice better. The essayist does not belittle at all mechanical execution nor the acquirement of that mechanical skill which enables us to execute what we know, but he does appeal to us to interest ourselves in what we do not know. He appeals to us to be sufficiently interested to work on things we do not know about; interested enough to work on things which seem to be entirely aside from our practice. The paper appeals to us to have a margin of energy for the thing which is not directly important to our office. It appeals to us to keep a little night oil and a little energy for that oil to put it into things which we may be able to use; to put it in on work which will enable us to understand what is being done by others. The paper has been especially interesting to me because unless we do get that conception of dentistry, unless we get a glimpse, a vision, or accept the view of dentistry which will enable us to throw energy into our professional work, dentistry may lose its possibilities. It seems as if some things were hanging back, as if dentistry had progressed to a point at which it is halting and must halt, and must stay there for a while, awaiting the development of things which will enable us to work in new lines, to awaken an interest in a knowledge of fundamental problems, of fundamental scientific laws which will enable us as a profession to take up with renewed energy new lines of thought.

It is a good while since Professor Michaels, of Paris, presented his work upon the salvia. As a profession, we do not know enough about physiological chemistry now to understand the work he presented. We have not had the energy to work enough in chemistry to be interested in it. We let it pass and work at some new technical proposition that we can grasp. There is a future awaiting the dental profession upon those lines. Only a few nights ago I saw a letter which showed the first attempt to put those principles into practice, and in handing that letter to me, Dr. Black remarked, "There is the first scientific attempt to dental prophylaxis," the first reaching after a prophylaxis on a scientific basis, and that will never be carried out until we do work along lines apart from our regular line of practice at the chair.

I do not believe that we can make too strong a plea for a broad view of dentistry, a vision of dentistry, a great conception of our chosen calling. Nothing will give us more pleasure, we might say, than to take a lofty view of our calling, and work to something we have not yet attained, something we do not even comprehend at this time. We follow a vision and are willing to work in lines that we do not know much about; we work in the dark, but nevertheless we work in some line to gain some end.

The whole spirit of this paper is an appeal that we save, from our regular acquirement, from that which is mastered and gained, from that which we simply apply as handed down to us, over and above that margin of energy for that which *may be* in the future.

DR. JOHN E. NYMAN:

I think I understood clearly Dr. Kirk's paper, and I am sorry Dr. Johnson gained the impression of it he did. Dr. Kirk expressed a full appreciation of the exquisite technique of the mechanical phase of our profession, but deplored and opposed the spirit that seems to prevail that the mechanical side is by far the larger one of our profession.

There is no question, as Dr. Noyes has said, but what men first did things empirically, but yet obtained good results. But as they began to learn the cause of the conditions with which they labored; as they came to formulate the reasons for the methods they employed, they succeeded in modifying those methods and obtained better results than before.

There is another feature to the question of rationalism and empiricism. We may do things in an empiric manner, and obtain certain results, but our next door neighbor will not follow us in our radical empiricism. He will practice some modification of our method, and may or may not obtain equally good results. But when we come to men who practice a method that is no longer empirical, but is rational, who say that we must do things thus and so, because of certain facts and certain laws, then we become convinced of the rationalism of the method. In that way you can convince men of the necessity of following out your practice and not attempting to modify it in a manner which totally nullifies it. When we are able to present rational reasons and rational methods to the whole profession, then the members of our profession will see the importance of adopting these methods with which they are enabled to obtain far better results than otherwise, and in proportion as they do that, so will the public be benefited thereby.

It seems peculiarly singular that those methods which have been the result of investigations into the vague, mysterious realms of medicine, have resulted in speedy and easy cures of those diseases which formerly created untold ravages in the human family, and which at that time were treated empirically. I need only refer in this connection to what has been accomplished by physicians in the treatment of diphtheria and tetanus. Formerly the death rate from these diseases was appalling. Physicians formerly by intervention could do little or nothing for patients suffering from these diseases. But when we came to know what it was that caused these troubles, and physicians formulated certain measures of cure and prevention, these diseases were no longer regarded as fatal or even in the light of serious diseases. Again, vaccination was practiced empirically; it was merely a promise of what there was to be learned; it was merely a far whisper from the future, so to speak. When men delved into the mysteries of life, they learned the causes of disease, and we began to have diphtheria antitoxin and tetanus antitoxin. Other great discoveries have been made by the medical profession. They have made the discovery that different species of bacteria will not only live in the same media, but they have made the still further discovery that by proper cultural methods antitoxins may be abtained from different bacteria. Formerly the medical profession neglected studies along those lines. So it is today in the practice of dentistry. You may be sure that the man whose time is given up to the consideration of the mechanical phase of dentistry will never be the one who will discover and formulate any method of prophylaxis for the troubles we have to deal with at present. Dr. D. D. Smith may have obtained excellent results with his empirical method of practice; but at present, when men find out the rational cause of immunity and susceptibility, and we supplement and modify Dr. Smith's empiricism with their rationalism, then we will be able to obtain far better results in the way of prophylaxis than we do now.

The whole spirit of the paper is directed towards the thought that prevention is better than cure; and so it is a plea for us to think of the vital forces of life with a view to preventing many of the ills which we cannot relieve by rigorous surgical measures. However, I do not think the time has come when the mechanical phase of our profession can be altogether abandoned, no matter what we are able to formulate in the way of prophylactic measures. The great indifference of the public will lead them to a neglect which is almost incomprehensible, and because of this incomprehensible neglect on the part of the public, there will still be a call for those men who by their skill can exercise the exquisite mechanical technique of our profession. On the other hand, there is no question as to the hopeful sign of the future. Men are beginning to impress more and more upon the members of the profession and to demonstrate their views upon the subject that not alone is the mechanical phase of our profession an important phase, but also therapeutic measures, so to speak, and perhaps still more than that the future will show that prophylaxis is the thing which will be the great uplifting measure of our profession.

Dr. Otto Holinger:

I have especially enjoyed Dr. Kirk's paper this evening because it has dealt with science. Whenever a man attempts to explain in a scientific way principles in dentistry he usually makes his listeners tired. The dentist, as he works in the mouth, has just as much right to be considered a member of the care-takers of the human economy as the aurist, the rhinologist, the general practitioner, or the surgeon. As science develops in the twentieth century, the indisputable fact has been established that all scientific principles are unchangeable. When we have a scientific truth, we have something that always remains a truth; and after we have developed a scientific technique to cope with a pathological condition, we find, as a rule, it is very simple. Take, for instance, pyorrhea alveolaris. We hear so much about it. Some men are inclined to think it is a simple pathological condition produced by one cause, which is not so; it is simply the name of a condition; for instance, we have suppurations about the teeth due to constitutional diseases, to diabetes, etc. We have local infections; we have the deposition of an irritating agent, and that irritant may be lime salt. After these things have become known and our technique has been developed, we can treat our patients on scientific principles. We never will make a mistake if we are able to recognize the condition scientifically, and use the proper means of correcting same.

Humanity at large demands that we give our best service because the people are giving us every opportunity, as it were, to develop our specialty, and we, as dentists, should and must respond to the call or fall in disrepute.

As to our dental colleges, I know from personal experience that students want to learn, the majority of them. Of course, there are lazy men wherever we go; but if a subject is presented in proper form, students will certainly try to grasp it and try to assimilate it.

With regard to individual investigation, I hardly think it can be undertaken by the busy practitioner as well as by our dental schools. We should have facilities for investigation in our colleges, which should have laboratories for investigation and for research work the same as our medical colleges have. We want men with unselfish motives as investigators; men who can devote their time to the investigation of abnormal conditions in the human mouth. But we are striving more toward prophylaxis than the removal of pathological conditions after they have become established. If more attention was devoted to prophylaxis, many of the conditions we now see would not be as advanced, and when we take that position dentistry will have reached a higher plane.

Dr. W. H. G. Logan:

The paper and discussions dealt with three important facts as I understood it.

First: Lack of exact knowledge of etiology and treatment of the pericimental tissue.

Second: A plea for more thorough dental prophylaxis.

Third: Advised change in educational methods and length of term in our dental schools.

With reference to the first question, I believe that the man who fully understands the exact etiological factors of the case he is then treating will get the best results from treatment.

In consideration of dental prophylaxis, I am of the opinion that we should look upon it as the best means we now possess to lessen dental caries, but that our full duty will not be rendered to our patients until we have discovered how to prevent the formation (if it is possible) of the gelatinous-like plaques on the buccal and proximal surface of the teeth. If this can be accomplished we will then do more than D. D. Smith or any other prophylactic advocate.

Smith and his followers remove the plaques. The real work before us is to discover how to prevent the formation of plaques, or if this cannot be done to put something in the hands of the patient that will destroy them as soon as formed.

The paper has advocated a four-year course, and most of the men discussing the paper agreed with that idea and that many subjects should be taught from an experimental and theoretical as well as from a practical standpoint. Let us discuss the advisibility of this. I am of the opinion that we should teach students in our dental schools truth, not theories; teach them what you and others absolutely know, no more, then you as teachers should go on with your experimental work until you can change your theories to established facts, and then teach these added truths to your students.

In regard to lengthening the course to four years, if the teacher is a teacher, in the true sense of that word, lecturing every hour that is alloted to him discussing only facts, he can do a great deal in the time we now have at our command, and unless the teacher is a great student himself he is apt to run out of something important to say before the term of thirty weeks of three years each is completed. If every teacher would only spend three or four times as many hours in preparing his lecture to every hour he stands in the lecture room he would get the undivided attention of his class. Let the teacher teach facts and illiminate the personal pronoun and forgetting for the time theories then the student will be eager to listen to him. Let the teacher teach principles and the students will strive to apply those principles in practical work.

Until we have more proven facts that are known by the profession and teaching body I cannot see the need of a four-year term.

In three years' time, if teachers do their full duty and the student body has average intelligence and do their duty, we can teach all the real facts that we know.

Confidentially, I wish to say if we are honest in regard to this matter I think it will be a long time before the profession and teaching body have so much knowledge that will require the average student more than three years of thirty teaching weeks to assimilate such information.

The vital point in the dental educational question is that we should only take as many years of a young man's time as is necessary restricting ourselves in teaching to the facts that are known, and remembering that ideas that are not proven are not known facts and therefore should not be taught.

DR. J. H. WOOLLEY:

I have the feeling that the reason why all of us are not on our feet at once is because the paper of Dr. Kirk has sunk deeply into our minds and has caused a good deal of introspection. I enjoyed the paper in common with the rest because it was on thoughtful lines. Dr. Kirk has followed out on lines similar to our modern educators in university education; that education which cuts out all that is useless, but gives to the student that which is practical, so that when he comes out from the university he does not come out as an educated fool. A university education, it seems to me, in reading between the lines, is that kind of preliminary education which will prepare the dentist to grasp scientific thoughts and ideas, scientific truths, and be enabled to cover a much larger field than the students of today whose preliminary education is comparatively limited.

Take the men of today who are most talked about; the men that are in the public eye; the men of force; the men who make their impress upon others, and we will find they have well-trained minds, so that when they enter the field of general culture they are enabled to grasp ideas, to elucidate their thoughts ,and hold the people with whom they come in contact, because they are, as a rule, men who are prolific in ideas that have been dug out of their brains.

Dr. Kirk has opened up a broad field. He has laid out a good deal of work for us to do. The growth of dentistry comes from the small contributions of a number of different men, and so our only hope is that some of us will grasp certain ideas and endeavor to get at the first principles and slowly, but surely, work out these problems.

I would like to say to Dr. Kirk, that the west bows to the east for his thoughtful contribution.

Dr. Olof Lange:

I came down tonight expecting to criticise Dr. Kirk's paper; but I do not find a single thing to attack.

When I went to school, about ten years ago, the boys used to say: "I will not study chemistry or any other useless science. No, let the professors teach us how to put in gold fillings. That pays."

If some man of force would explain to the students in the beginning of their first term, the necessity of a scientific basis for all the work, they would do much better than they are doing at present. There are very few teachers who can hold the attention of students.

When I went to school there was no one who stimulated me more than Dr. G. V. Black, because he spoke from a practical as well as a theoretical standpoint. He was scientific.

I should like to relate an incident which, I think, corroborates the statements made by the essayist.

A man came to me about five years ago to have some sharp corners ground off his teeth, because he bit his cheek while eating.

Incidentally he told me that he had suffered from pain in the left side of his tongue for a number of years, that he had been treated by several physicians without relief. Now, he was under the care of one of the best specialists for skin diseases in Chicago, who had put him on certain treatment and forbidden smoking. I happened to remember that Dr. Eckley told us when lecturing on the fifth nerve, that on account of its lingual branch, pain may be felt in the tongue while the cause of the trouble is situated in the teeth. I examined the patient and found the gland of his neck below the angle of the jaw enlarged and tender.

There were no caries or dead pulps in the teeth. The gums seemed healthy, but upon careful examination I found a narrow deep pocket on the distal of the second lower left molar, with a little calculus on the root. I told the patient that the pain in the tongue and the inflammation of the gland possibly came from the disease in the peridental membrane of this tooth; and that probably I could cure it.

The patient laughed at me, he knew me well, and said: "You, a dentist, think you can cure a trouble which the best doctors in town cannot understand."

I removed the calculus, curetted the alveolar process, which I found carious, then treated the pocket with a little aromatic sulphuric acid.

When he returned in a few days, the pain in the tongue had ceased, and the glands were less tender.

Shortly afterwards he left for Europe feeling perfectly well.

About a year and a half later he returned to me complaining of the old pain in the tongue. I treated him as before and he has been well ever since. This case shows that it is necessary to know the cause and remove it in order to effect a cure. Let me mention another case:

A patient of mine had been treated for goitre during a considerable time. She told me that her physician had advised her to quit taking medicine as it did no good; that she had better wait a while to see if nature would cure her; and that her condition was mainly due to the run-down condition of her nervous system.

After examining her mouth, I found that she was unable to chew her food properly. I suggested that a bridge would help her very much; that she thus would be able to masticate her food, which would relieve the stomach of much of its work and more nourishment would be sent by the blood to the brain, which in turn could through the nerves control the condition in the throat.

She got the bridge at Christmas time. And now, after using it about two months she claims that the goitre has almost disappeared.

Another case which shows that even "The scientific research-work" of childhood may be turned into practical use: When I was a little boy, I saw my father one morning, rubbing the teeth and gums of one of his calves with salt. I asked him: "Why do you do that?" He answered: "The milk-teeth are loose and the calf cannot bite off the grass; but by rubbing them with salt the circulation is increased, they fasten again, and remain till the new ones come."

Now, I have applied the same treatment to my patients who suffer from a chronic inflammation of the gums and peridental membrane (known as pyorrhea) with very good results.

Dr. Kirk (closing *the discussion*):

I want to say, first of all, that I am extremely gratified, and that is stating it mildly, at the scope of the discussion, at the full measure of appreciation that has been accorded to the paper and, above all, for the clear understanding of the position that I have attempted to portray. I came here with mixed feelings in regard this matter. I felt very sure that I was treading upon rather sensitive ground; but it seems I am always treading on sensitive ground somehow or other, especially when I take up the discussion or study of the relation of the scientific to the practical, or the relation of the scientific method to anything, because there are on the other side of the fence, so to speak, practical men, practical, according to their own ideals, and many seem to think I am trying to make a sort of invidious distinction between the importance of these two things, but I am not. I have endeavored, as accurately as I know how to use the English language, to state my position in regard to that. It is not a question of the relative value of the scientific and the mechanical at all, but it is a question of our attitude of mind toward both of them. That is what I am trying to get at.

I said in my paper, I will yield first place to no man in my admiration, my respect, for the dignity of mechanics in dentistry. I intimated in my paper that I had a good deal to do with mechanics myself, and if any of you want further evidence of it, I will ask you to shake hands with the essayist, whose palmer cuticle is getting to be very much like the sole of an old shoe from doing mechanical work.

I think Dr. Johnson, in opening the discussion, evinced a slight misconception in regard to my position. Of course, there were good fillings put in, good restorative operations done, long before we knew anything about germs, and especially long before we knew anything about the germ theory of the disease we call dental caries. Lots of good operations were done on an empirical basis, and teeth were saved by stuffing the cavities of decay with gold foil; in fact, some of them were saved as well as they are saved today. But does it ever occur to you how many teeth were destroyed by that same empirical method? Somebody once spoke to a great German oculist (I think it was von Graefe) in admiration of his ability in the removal of a cataract. He said, "Did you ever know what it cost me to acquire such dexterity? I spoiled a hatful of eyes in learning how to do a cataract operation like that."

I am older than I look. I came into dentisty very early and once presided at a meeting in which there was a hot discussion as to whether we should make permanent separations between teeth with flat surfaces, or whether it was better practice to coutour the teeth. That occurred even after the death of Marshall Webb. What a long step in advance we have made in regard to that matter since we have studied the interproximal spaces, since we know something about the proper contouring of the teeth, and the proper positions in which to place cavity margins. Today we are saving a lot more teeth than formerly, and ruining infinitely less than we did when we treated them on a purely empirical basis. I am not so sure, so far as pure manipulatiive skill is concerned, that it was not just as highly developed then as it is today. I saw operations done by men who did not know how to use the rubber dam. I have seen a contour filling put upon the disto-buccal corner of a lower third molar by a man who knew how to use gold pluggers and foil, but did not know how to use the rubber dam, and his filling had a surface and finish like the inside of your watch case. But how he did it, only the operator and God Almighty know. (Laughter.) This man had rare manipulative skill; but it is not manipulative skill alone that produces the result.

I make a plea for a better understanding of the purpose of our mechanical work; a plea that we study our restorative operations from a scientific standpoint. That is what I tried to portray in the paper. I came here to make a plea to you, my colleagues in dentistry, that you will try to develop a sympathetic attitude of mind toward this work and the men who are doing it. This plea is related to all scientific work in dentistry, whether we are able to understand its immediate practical applications or not. I came here to Chicago to deliver my message because I know you are doing a lot of good scientific work out here. Many of you are being talked about on account of the good work you are doing. Reference has been made to Dr. Cook, who has already told you that if he had gotten up and said what I have said it would not be considered authority or thought much of. I do not say this because I am an authority, but because he is one of you. He is right here on the ground, and I fear that many of you undervalue much of the good work that he and many others are doing. We know it is said that a prophet is not without honor save in his own country, or, as it has been evolved in the mind of a certain newspaper man, "a prophet is like a sausage not of much account in the place where it is manufactured." (Laughter.) I say this to urge you to treat sympathetically and encourage the efforts of the good fellows who are working for you and for us all. Realize that you have them right here among you and take care of them, and if you cannot speak a good word for them once in a while at least, keep your hands off and let them work out their purposes. (Applause.)

I wish again to thank you for all the kind personal things you have said.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States and its possessions, Cuba, Canada and Mexico. All other countries $1.75 a year.

EDITORIAL.

THE ILLINOIS STATE DENTAL SOCIETY.

The coming meeting of this society, May 14, 15, 16, 17, at Quincy, promises to be a most interesting event. It will be the third meeting under the reorganization plan and the method has now been sufficiently tested to insure its success. The membership is about 1,200, with the interest apparently maintained throughout the State, and the prospects good for a large attendance at this meeting. The program consists of eleven essays besides the president's address and the reports of committees. Two sessions will be devoted to clinics with a large variety of subjects for demonstration. One half day will be spent in a steam boat ride on the Mississippi River, and arrangements have been made for the members to visit the Soldiers' and Sailors' Home and other places of interest. It will thus be seen that not only the scientific but the social features of the meeting have been well considered, and no practitioner can afford to remain away.

This state society has now made a record for membership, attendance, and enthusiasm unequaled elsewhere. The chairman of the reorganization committee, Dr. A. D. Black, has received letters from twenty-four other States consulting him about the plan of organization, and it is probable that the idea will be adopted by many of them. It means a broader field of usefulness for state societies throughout the country, and a more unified sentiment among the profession. To members of societies from other States a cordial invitation is extended to attend our coming meeting and watch the practical working of the plan.

BOOK REVIEWS.

ATLAS UND LEHRBUCH DER MODERNEN ZAHNARZTLICHEN METALLTECHNIK, VON ZAHNARZT. DR. EUG. MULLER-WADENSWIL. ZURICH. 1907.

Dr. Muller's atlas and hand book of modern dental metal technic is a notable contribution to the German literature of the subject. It is a large volume of 247 pages, the distinctive feature of which is the excellence of the illustrations. There are about 1,000—most of them being colored plates of great beauty. It is becoming noticeable that in recent works on dentistry in the German language the character of the colored cuts far excell those of any other country. In this present work it is a delight to look through the volume for the entertainment provided by the illustrations even without a knowledge of the German language. We offer our congratulations to Dr. Muller on his achievement.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

The April meetings of the First District Dental Society and the Second District Dental Society were purely business sessions for the annual election of officers.

At the meeting of the New York Institute of Stomatology Dr. Geo. S. Allan described what he called a new filling material, being a mixture of oxy-phosphate of copper and Schiers' tin cement. Both are old well known filling materials but he claimed the combination was new. He thinks he obtains the toughness of tin with the germicidal qualities of copper. He uses the two in about equal proportions. It becomes very hard—though slowly, and will stand the stress of mastication when thoroughly hard. Naturally its dark color precludes its use in any conspicuous cavity.

The subject for the evening was "Orthodontia." Dr. F. L. Stanton of New York city opened the subject with a short paper on diagnosis, followed by Dr. Frank A. Gough of Brooklyn, N. Y., on the same division. Dr. Stanton, after quoting at some length from Dr. Angle's writings, presented some slides to illustrate diagnosis. Dr.

Gough spoke of the value of diagnosis to the general practitioner enabling him to recognize conditions and decide quickly what should be done.

Dr. J. Lowe Young of New York and Dr. H. Clay Ferris of Brooklyn, discussed the division of treatment. Dr. Young thought a thorough diagnosis was the great point in determining the treatment to be pursued. Dr. Rulof B. Stanley and Dr. F. C. Kemple of New York presented the question of retention, not so much from the standpoint of how to retain, but of length of time needed to secure permanent retention—showing how difficult it may be to determine.

At the March meeting of the New York Institute of Dental Technique Dr. Harold S. Vaughn presented a paper entitled, "The Technique of Cocaine Anesthesia in Dental and Oral Surgery," which was discussed by Prof. R. H. M. Dawbarn and Prof. M. I. Schamberg. Dr. Vaughn has read this winter before one or more of our societies a paper entitled "Nerve or Pulp-blocking," and this paper before the "Technique" was essentially the same. Dr. Vaughn believes that by deep injection so the nerve may be reached before entering the tooth, complete and safe anesthesia is produced. As far as we could determine that seemed to be the gist of his paper. Dr. Dawbarn made clear the fact that cocaine acts peripherally, citing an injection at the elbow completely anesthetizing the forearm, hand and fingers, but the arm above the injection not being affected.

On March 18 the Central Dental Association of Northern New Jersey held its regular meeting at Newark to listen to a paper by Dr. Wm. C. Fisher of New York, entitled "Imperialism, Coercion and Biased Censure in the Field of Dental Journalism—A Plea For Its Emancipation."

Dr. Fisher's paper was an arraignment of what he denominated the "Trust Journals" on various grounds, some of which were evidently heresay. He claimed that a "one man journal" could not in the nature of things be a success. He made some statements about an editor of a certain western journal having been asked to resign because he would not admit a certain article not ethical. He made this as a strong argument in favor of his case, but later others who spoke disproved some of his statements. He spoke at some length of a certain prominent dentist who claims that he cannot gain admission to the columns of any of the dental magazines published by

"Trade Houses," and used this as an argument in favor of his claim that the dental supply houses own and control the editors of their magazines.

Dr. Chas. A. Meeker opened the discussion by briefly calling attention to the fact that the C. D. A. was the only independent dental society which was willing to give every one a chance. He then eulogized the next speaker, claiming that to his own knowledge Dr. Ottolengui was absolutely free and untrammelled and that the aspersions cast on him by the essayist were unwarranted.

Dr. Ottolengui flayed the essayist most unmercifully, but apparently Dr. Ottolengui had the facts on his side. His version, backed by evidence of the case of the editor of a certain western journal was totally different from Dr. Fisher's. He claimed that the paper was nothing less than slander and he proposed to refute it. It was slander to say that the editors of dental journals had sold themselves individually to the "Trust Houses." He asked if it was believable that such men as E. C. Kirk, J. D. Patterson, C. N. Johnson, Wilbur F. Litch, A. W. Harlan, and others whom he mentioned had done so—could do so. For himself he had never been trammelled. His one stipulation when he became an editor was that he should conduct the journal without interference, and as he saw fit.

Dr. A. W. Harlan followed with some remarks along the line of higher literature and how many things now discordant might be made to work together for the general good of the journalistic work.

Dr. Horace Gould and others of the Second District Society followed, showing how the action of the executive committee of that society, when Dr. Ottolengui was its chairman, had been misconstrued, to say the least, by the essayist and twisted into an argument for his case, without any warrant therefor.

THE BURROUGHS.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Repairing a Hole in Rubber Dam:—Dry both sides and mix a little cement, sufficient to fill the hole, and leave an excess on both sides. Force it through and press the sides together. A small piece of vulcanite, moistened in chloroform, may be manipulated in the same manner with good results.—*W. A. Robertson, Crookston, Minn.*

Comparison of Gold and Amalgam:—The best operator can not be quite as sure of making as good an amalgam filling as he can with a gold filling. I can make a good gold filling about as quickly as I can make a good amalgam filling, and I know when I have made a good gold filling because I can finish it. If I have defective margins I can finish them, but I can not say so much so far as amalgam fillings are concerned.—*J. N. Crouse, Chicago.*

Fillings in Bicuspids:—Amalgam with all its faults may be preferred in a great many of these cases, but under strict condition to be lined with cement undearneath. Large bicuspid cavities, especially in pulpless teeth, will remain permanently safe if filled after this method. Let me recommend the use of steel rings, suggested by Dr. Bryan, when restoring lost contours with amalgam over cement. With their use you can build up the tooth to its natural shape, especially if you leave the band on till the next day and then polish the filling carefully.—*William Hirschfeld, Paris, France.*

Building Up Gold Inlays:—I use a copper amalgam model to begin with, and platinum foil, 1-1000 thickness, and swage the platinum into the model. Then with my pluggers, using the largest Pack's pellets I can buy, I fill these cavities full just as I want them built up, invest in an investment compound and flow some 22-carat solder into it and finish it. You can do this by using a gold matrix as well. In this way you can get contour and contact points, and you can build up cusps just as you want them and take your own time to do it.—*E. J. Perry, Chicago.*

Removing Difficult Plaster Impressions:—In cases where the teeth are separated and drifted one way and another, forming interlocking spaces, I explain to the patient that I shall take the tray out first, leaving the plaster in the mouth. Then I have the tray smooth inside and smeared with a little vaseline before filling with plaster. When the plaster is sufficiently set in the mouth, I remove the tray and split the plaster in line with the teeth, taking it out in sections and placing the fragments in correct relation in the tray.—*J. A. Bullard, Chicago.*

Preparation of Amalgam for a Filling:—To make a strong filling and one that will have close margins, get first the right proportion of mercury. Mix and work the material until the mass is smooth and plastic. Then it should take the finest skin markings of the fingers. Continue the kneading until the first slight evidence of stiffening becomes apparent and then make the filling quickly. It should stiffen at once on being pressed into the cavity so that it will not draw back from the walls when the instrument is withdrawn, or move again when more material is pressed upon it.—*G. V. Black, Chicago.*

Mixing Plaster of Paris:—Stirring plaster induces more rapid chemical action, which causes it to expand to a greater extent than if not stirred at all, and that is the secret of mixing plaster successfully. Sulphate of potassum added to plaster will control such expansion naturally as might occur, and bring it down to the minimum point. I have seen it at times remian perfectly dead, that is, with no movement at all when sulphate of potassium is added. The presence of sulphate of potassium softens the plaster, and the density of the set plaster is impaired, and consequently should not be used for models.—*J. H. Prothero, Chicago.*

Filling Cavities in Children's Teeth:—We are all familiar with the extensive ravages of decay in the teeth of young patients, especially the first permanent molars, where the common practice has been to temporize or to use amalgam, neither of which has been prolific of the best results. Here the gold inlay performs a mission of great utility and satisfaction to the little one. Since cavity preparation for a gold filling is so favorable to the possibilities of child endurance and can be accomplished by short sittings, without any loss of time to the operator, this method is nearly ideal. If the gold inlay can do nothing more than this, it has performed a definite and worthy purpose.—*W. D. N. Moore, Chicago.*

Specialism:—The hand that is trained to one special mechanism can not easily adapt itself with the same dexterity to another. Hence specialism can not be overlooked. We must stand together and work hand in hand. Sooner or later we will form one column; otherwise we will destroy one another and the entire profession will sink to a level of trade where every competitor will supplement his skill as an artisan by all the tricks of cunningness and diplomacy of which he may be able. The medical profession has been divided into specialties and has become unavoidable to subdivision. It is an undeniable fact that at the present day medical science has expanded to such an extent that its intelligent cultivation as a whole by one person has become impossible.—*J. E. Hinkins, Chicago.*

Sterilization:—Mechanical cleaning alone will never give the warranty of a perfect sterilization. Whenever this is a requirement then sterilization and disinfection of instruments and materials by heat can with safety be relied upon. This can readily be accomplished by the use of any steam sterilizer. The Rochester steam sterilizer answers the purpose for which it is intended admirably. After the instruments are cleaned with water, soap and brush, they may be boiled in soda solution, or steamed, as the operator may desire. One nice feature of this sterilizer is the fact that after instruments and materials have been subjected to a steam bath for fifteen or twenty minutes the turn of a lever cuts off the steam and admits only hot air to the chamber. By this method instruments are quickly dried and ready for immediate use.—*Henry L. Banzhaf, Milwaukee, Wis.*

Method of Taking Plaster Impressions in Partial Cases:—I take an impression without an impression cup. In doing this the first thing is to have the patient rinse the mouth with milk of magnesia. This lubricates the teeth and makes it possible for the plaster to get a close adaptation to the teeth, without sticking to them. If the plaster is mixed so that it will not drop off in chunks, but run off, you can keep on piling up until you have got sufficient surface, so that you will have as much bulk of plaster as you would in an impression-cup. After the plaster has become hard it will not readily move out of place, but may easily be cut with a spatula. I slit it half way through in three or four places, and with a broad spatula placed in the full length of the slit, twist it out and spring it apart. The pieces may easily be placed together again after removal.—*William H. Taggart, Chicago.*

Alphozone in Dental Therapeutics:—This drug only recently put on the market is an organic peroxid, a powerful germicide, non-toxic and non-explosive and indicated in all conditions where a germicide can be brought into contact with the pathogenic micro-organisms present. It is a big improvement over the peroxid of hydrogen, as there is no effervescence, consequently no infiltration of the alveolar process and no liability of increased inflammation. It is especially indicated in the treatment of chronic blind abscess. The solution must be prepared fresh. One tablet dissolved in four ounces of water makes practically a 1-1000 solution which is strong enough. After mechanically evacuating as much of the pus as possible use the solution to thoroughly cleanse canals, then wrap a broach in cotton, dip in beechwood creosote using this as a vehicle for the powdered alphozone and insert in canals. This dressing can be hermetically sealed in the cavity but should be changed every twenty-four hours, as the rapidly forming pus oozing down through apex of root soon neutralizes the dressing. I have cured the most obstinate cases with three such treatments and there has been no recurrence of the trouble.—*Edmund J. Kelly, Chatsworth, Ill.*

MEMORANDA.

WEST VIRGINIA STATE BOARD OF DENTAL EXAMINERS.

The West Virginia State Board of Dental Examiners will hold their next meeting for the examination of candidates at Wheeling, W. Va., June 12, 13 and 14, 1907. For further information address

H. M. Van Voorhis, Secretary,
Morgantown, W. Va.

KENTUCKY STATE BOARD OF DENTAL EXAMINERS.

The Kentucky State Board of Dental Examiners will meet for the examination of applicants at Louisville, Ky., on the 4th of June. 1907, at the Masonic Temple, commencing at 9 o'clock.

J. Richard Wallace, *Secretary,*
Louisville, Ky.

IOWA STATE DENTAL SOCIETY.

The forty-fifth annual meeting of the Iowa State Dental Society will be held at Cedar Rapids, Iowa, May 7, 8 and 9, 1907.

A good program is being arranged for. A cordial invitation is extended to the profession.

C. L. Topliff, *Secretary,*
Decorah, Iowa.

THE MISSOURI STATE DENTAL ASSOCIATION.

The next annual meeting will convene in Kansas City, Mo., June 4, 5 and 6. 1907. A most interesting and profitable meeting is anticipated. All ethical members of the profession are cordially invited to attend.

F. G. Worthley, *President,*
Kansas City.

E. P. Dameron, *Cor. Secretary,*
St. Louis.

MINNESOTA STATE BOARD.

The State Board of Dental Examiners of Minnesota will hold a special meeting at the Dental building of the State University in Minneapolis, on June 6, 7 and 8, 1907. All applications must be in the hands of the secretary by 10 o'clock June 6th, as examinations will begin at 10:30 o'clock sharp. All blanks, paper and patients supplied by the board. Operating instruments, etc., must be brought by the applicant. Any further information will be given by addressing

Geo. S. Todd, *Secretary,*
Lake City, Minn.

KANSAS STATE BOARD OF DENTAL EXAMINERS.

The Kansas State Board of Dental Examiners will hold their next meeting for examination in Topeka, May 22, 23, 24 and 25, 1907, at the Copeland Hotel Annex. The examination fee is $25 and an additional fee of $5 for a license.

Examination is not necessary for a graduate of a reputable dental college. The fee for registering a diploma is $25.

Address all communications to

F. O. Hetrick, *Secretary,*
Ottawa, Kas.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of the National Association of Dental Faculties will be held in Minneapolis, Minn., commencing at 2 p. m., Friday, July 26, 1907.

The executive committee will meet at 10 a. m. the same day. The West Hotel has been selected as headquarters and place of meeting. Hotel rates as published in the notices of meeting of national examiners will prevail.

Very truly yours, H. B. TILESTON, *Chairman Executive Committee.*
B. HOLLY SMITH, *Secretary Executive Committee,*
1007 Madison Avenue, Baltimore, Md.

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next examination of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. D., beginning at 3 o'clock, June 6th, and continuing three days.

All candidates are required to bring operating instruments including dental engine, and such other appliances and materials as are necessary to do crown and bridge work.

All applications, together with $10 fee, must positively be in the hands of the secretary by June 3d, and no applications will be considered thereafter. - G. W. COLLINS, *Secretary.*

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners for examination of candidates for license to practice dentistry in Wisconsin will be held Monday, June 10, 1907, at the Wisconsin College of Physicians and Surgeons, Milwaukee, Wis.

Application must be made to the secretary fifteen days before examination. The candidate must be a graduate of a reputable dental college, or have been engaged in the reputable practice of dentistry for four consecutive years, or an apprentice to a reputable dentist for five years.

For further particulars apply to J. J. WRIGHT, Secretary,
1218 Wells Building, Milwaukee, Wis.

RESOLUTIONS ON THE DEATH OF DR. W. J. KINDER BY THE WABASH RIVER SECTION OF THE ILLINOIS STATE DENTAL SOCIETY.

WHEREAS, Our friend and fellow practitioner, Dr. W. J. Kinder, of Lawrenceville, has recently passed away from earth, being an honored member of this society, we greatly appreciate the interest he took in our proceedings for the uplifting of our chosen profession and the betterment of mankind;

WHEREAS, We shall miss the smile of his genial countenance and the benediction of his personal presence. We shall always reap the benefits of the influence of his thought, and the spirit of righteousness which permeated his whole character and illuminated his every action; therefore be it

Resolved, That this resolution be spread on the minutes and a copy sent to his surviving family.

GEORGE E. FRANKE,
EUGENE MCGUIRE,
C. E. BELLCHAMBER,
Committee.

RECENT PATENTS OF INTEREST TO DENTISTS.

844,781. Dental gold pellet holder. Henry P. Davis, Washington, D. C.
844,395. Toothbrush. Eduard Penkala, Zagrab, Austria-Hungary.
845,064. Toothbrush. Frederick P. Drowne, Warren, R. I.
846,030. Instrument tray. William G. Hullhorst, Toledo, Ohio.
846,420. Dental bracket. Albert W. McKenney, Roxbury, Mass.
845,822. Head rest for chairs. David Sarason, Berlin, Germany.
845,835. Gas regulator for dental vulcanizers. Elmer E. Wightman, Chicago, Ill.
846,900. Toothbrush. William O. Bloom, Worcester, Mass.
846,998. Pyrometer. John F. Hammond, Brewster, N. Y.
847,778. Tooth separator. James W. Ivory, Philadelphia, Pa.
847,591. Dental handpiece. Henry S. Miller, Rochester, N. Y.
847,828. Toothpick holder. Wilhelm Sandleben, Hamburg, Germany.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

NATIONAL DENTAL ASSOCIATION.

The eleventh annual session of this asociation will be held in Minneapolis July 30th and 31st, and August 1st and 2d, when a full program of essays, demonstrations and clinics will be presented. Reduced rates on all railways and at hotels will be secured. The largest meeting in the history of the association is confidently expected. Full program in July journals.

The following are the officers of the sections and chairmen of clinics and local arrangements:

Section 1.

Prosthetic Dentistry, Crown and Bridge Work, Orthodontia, Metallurgy, Chemistry and allied subjects.

D. O. M. Le Cron, Chairman, Missouri Trust building, St. Louis, Mo.
W. G. Mason, Vice-Chairman, Tampa, Fla.
E. P. Dameron, Secretary, 58 De Menil building, St. Louis, Mo.

Section 2.

Operative Dentistry, Nomenclature, Literature, Dental Education and allied subjects.

William Crenshaw, Chairman—621 Prudential Building, Atlanta, Ga.
John I. Hart, Vice-Chairman, 118 West 56th street, New York, N. Y.
J. J. Sarrazin, Secretary, Godchaux building, New Orleans, La.

Section 3.

Oral Surgery, Anatomy, Physiology, Histology, Pathology, Etiology, Hygiene, Prophylaxis, Materia Medica and allied subjects.

William Carr, Chairman, 35 West 46th street, New York, N. Y.
W. H. G. Logan, Vice-Chairman, 785 Winthrop avenue, Chicago, Ill.
M. L. Rhein, Secretary, 38 East 61st street, New York, N. Y.

Clinics.

E. K. Wedelstaedt, Chairman, 204 New York Life building, St. Paul, Minn.

Section on Inlays.

Walter N. Murray, Chairman, 601 Medical block, Minneapolis, Minn.

Local Committee of Arrangements.

F. B. Kremer, Chairman, Masonic Temple, Minneapolis, Minn.

Delegates received only from state societies, but a cordial invitation is extended to all reputable practitioners to attend the meeting.

C. S. Butler, *Secretary,*
267 Elmwood avenue, Buffalo, N. Y.

A. H. Peck, *President,*
92 State street, Chicago, Ill.

JAMESTOWN EXPOSITION, NORFOLK, VA., 1907.

The Jamestown Dental Convention will be held at Norfolk, Va., on September 10 to 12, 1907.

Committee on Organization.—Burton Lee Thorpe, chairman, St. Louis, Mo.; H. Wood Campbell, secretary, Suffolk, Va.; F. W. Stiff, treasurer, Richmond, Va.; R. H. Walker, Norfolk, Va.; Thomas P. Hinman, Atlanta, Ga.; Clarence J. Grieves, Baltimore, Md.; J. E. Chace, Ocala, Fla.

The Jamestown Dental Convention will be held in an especially equipped building on the exposition grounds, which was built for the purpose of accommodating this convention. The building is equipped with an auditorium, committee rooms, and excellent facilities for conducting dental clinics and for holding exhibits. All of these will be held in this building. The entrance to the building is outside of the grounds; however, one may obtain access to the grounds through it. The building is wired with both direct and alternating current, equipped with running water, well lighted and contains all modern conveniences, thus making it an ideal convention hall. The exhibits are under the management of Dr. John W. Manning, Bank of Commerce building, Norfolk, Va. To him exhibitors should apply at once for space. Price per foot and a plat of the hall will be sent upon request. The clinics are under the supervision and direct control of Dr. C. J. Grieves, Park and Madison avenues, Baltimore, Md. The membership committee is headed by Dr. F. W. Stiff, the general chairman, 600 East Grace street, Richmond, Va., who already reports memberships rapidly coming in. The membership fee is five dollars, which will entitle members to a bound copy of the proceedings. A half rate, $2.50, is made to bona fide students upon certificates from the deans of their colleges, and when presented to the state chairman of the membership committee for endorsement and acceptance will entitle them to the rights and privileges of the convention. The essayists are to be Prof. W. D. Miller, of Berlin, Germany, Dr. F. T. Van Woert, Brooklyn, N. Y., whose subject is "Is the Cemented Filling the Filling of the Future?"; Dr. Charles L. Alexander, of Charlotte, N. C., who will present a paper on "Gold Inlay." The other essayists will be announced later. Dr. E. P. Beadles was elected by the committee on organization in February to go to Europe and extend a cordial invitation to the dental societies and individual dentists to attend the convention. The following officers were elected by the committee at its recent meeting, February 23, 1907:

Honorary President—Dr. J. Y. Crawford, Nashville, Tenn.
President—Dr. V. E. Turner, Raleigh, N. C.
First Vice-President—Dr. B. Holly Smith, Baltimore, Md.
Secretary-General—Dr. George F. Keesee, Richmond, Va.
Treasurer—Dr. Mark F. Finlay, Washington, D. C.

THE NATIONAL DENTAL ASSOCIATION CLINIC.

There is every indication that there will be a large clinic held in Minneapolis on July 31st and August 1st.

Many men have signified their intention to be present and take part in either the operative work, or else give some kind of a table clinic. If I am to judge from what has been written me, then I feel certain that we shall have a most interesting meeting, so far as the clinic is concerned.

In the past there has been some criticism regarding the clinic room being so far away from headquarters. In no sense of the word is the clinic committee to be blamed for this condition of affairs. It must take what is offered or else not have clinical demonstrations. Now, this year there is every assurance that this condition will be materially changed. Dr. F. B. Kremer, the chairman of the local committee of arrangements, is a man of much experience in dental society work. Therefore, he is the very man for the place. He knows what is desired, and, beyond question, he will secure a hall for the clinic room in close proximity to the headquarters. This year, at least, those contemplating being with us need not worry about this special part of the meeting, for Dr. Kremer is a man who does not neglect anything.

From reports which are constantly being received there is every reason to believe that we shall hold a most successful clinic.

The following gentlemen are acting as district and state chairman:

For the New England states, Dr. G. E. Savage, Worcester, Mass.
New York, Dr. F. L. Fossume, New York.
New Jersey, Delaware and District of Columbia, Dr. M. F. Finley, Washington, D. C.
Maryland, Dr. C. H. Ginrich, Baltimore, Md.
Virginia and West Virginia—Dr. F. W. Stiff, Richmond, Va.
North and South Carolina and Georgia, Dr. H. H. Johnson, Macon, Ga.
Florida, Alabama and Mississippi, Dr. A. T. Reeves, Selma, Ala.
Tennessee and Kentucky, Dr. W. M. Slack, Memphis, Tenn.
Pennsylvania, Dr. H. E. Friesell, Pittsburg.
Ohio, Dr. H. C. Brown, Columbus.
Indiana, Dr. C. D. Lucas, Indianapolis.
Illinois, Dr. F. W. Gethro, Chicago.
Wisconsin, Dr. S. H. Chase, Madison.
Manitoba, Dr. K. C. Campbell, Winnipeg.

It is not an easy matter to arrange the program and I shall be grateful to all the chairmen for their list of clinicians. The earlier the list is sent the better.

E. K. Wedelstaedt, *Chairman, Clinic Section*,
New York Life Building, St. Paul, Minn.

OBITUARY.

DR. G. ARTHUR ROBERTS.

Died, April 14, 1907, at his home in Toronto, Canada, G. Arthur Roberts, in his thirty-fourth year.

By the death of Dr. Roberts, the dental profession of Ontario loses one of its brightest and most capable members. Although not enjoying good health for some months past his sudden demise came as a great shock to his many friends and associates. He graduated from Philadelphia in '96 and from Toronto in '97. He gave up general practice in June, 1904, since which time he had devoted his efforts exclusively to orthodontia, being the first dentist in Canada to limit his practice to this specialty, and at the time of his death had associated with him Dr. Guy G. Hume. He was examiner in orthodontia for the Royal College of Dental Surgeons and for the Dominion Dental Council.

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, JUNE, 1907. No. 6

METHODS IN PROSTHESIS WHICH HAVE DEVELOPED FROM THE GOLD INLAY.*

BY CHAS. L. ALEXANDER, D. D. S., CHARLOTTE, N. C.

As we advance in years and accumulate knowledge we should become less dogmatic as to the originality of our ideas regarding material things, remembering always the old adage that "there is nothing new under the sun."

From time to time we drop upon a method of accomplishing results which are satisfactory and beautiful from a dental point of view; without making an investigation we proclaim our supposed discovery, but lo! what a drop in our thermometer of conceit when we have called to our attention the fact that this identical method was practiced by the Egyptians centuries ago, certain proofs now existing in the mouth of the mummy. Even when evidences of our condemnation can not be produced in the mouth of the proverbial mummy, we can rest assured that the archaeologist of some other section will produce it.

The object of this paper is to call your attention to and give the technique of methods in dental prosthesis which have developed from the gold inlay. Possibly some of you gentlemen have put into practice the methods I will present, but for the benefit of those who have not, it will be worth their while to give this subject close study.

I shall within the limited scope admissible on this occasion try to reveal my ideas in such a practical way as to make them appeal to you for support and adoption. The work is purely esthetic and practical, standing thus upon its own merit; a description of it to be placed in the archives of your society need not be adorned with lines which flow from the pen of a scholar given to the use of beautiful rhetorical construction. A description of this nature would be pleasing to the ear and restful to the mind, but for the practical application of the method it would not serve the purpose which is paramount; namely, to supply man with an apparent necessity.

---

*Read before the Chicago-Odontographic Society, March, 1907.

Since my first experience with the gold inlay I have continued firm in the belief that the principle involved would revolutionize methods in general use at that time. I remember how little commendation the first paper I read upon this subject received from my hearers. All admitted that the work was beautiful, but condemned it on account of its supposed weak point, the cement attachment. My convictions as to its true merit were deep-rooted. I remained undiscouraged. Today I do not stand alone when I laud the gold inlay and its collateral development as most worthy of your consideration as a valuable adjunct to operative and prosthetic dentistry.

Possibly the most practical development from the gold inlay is the hood and saddle crown, which serves a most excellent purpose in bridge making as an abutment. Since the work I propose to show you depends upon the hood abutment for attachment to the natural tooth, I will deem it pertinent just here to give in detail the technique employed in its construction, this description being practically a partial reproduction of my ideas embodied in a paper read before the Georgia State Dental Society some years ago:

"Where it becomes necessary to avoid a display of gold, hood or cast abutments for dental bridges can be employed to great advantage.

"In order to give a more comprehensive idea of the method, we will describe in detail the mechanism of two cases where the condition of the mouth frequently calls for and demands such abutments.

"1st. Possibly a live upper cuspid is the most difficult and unsatisfactory tooth to provide with an attachment to serve as a support for a bridge. Therefore, we select such a case. However, the same method of constructing a hood for this tooth can be used for all the anterior teeth above and below.

"By an examination of the occlusion of the teeth we ascertain just how much the lingual surface must be cut away to admit of sufficient space to give strength to the hood. The tooth must be prepared so that the base of the hood can be made to extend well under the gum margin; also over the cutting edge, and far enough to the front on the proximal surface to prevent the margin from being a point of contact with the adjoining teeth.

(If it were possible to get the patient to adopt and maintain a prophylaxis treatment, I would insist that the hood must stop short of the gum margin, but knowing that nine-tenths of the people soon disregard this preventative measure against decay, I think it wise to protect the tooth at this point, by letting all hoods or crowns extend slightly under the gingival margin, except where there has been great resorption.)

Just here allow me to say that I condemn the ordinary open face crown without reservation; they are unclean, and I have never seen one stand the test of time.

"Over this prepared surface a sheet of No. 120 rolled gold foil is burnished to an approximate fit. The tooth is now provided with a groove extending across the lingual surface about one-eighth of an inch below the cutting edge and running well down on the mesial and distal surface. This groove is fitted with a staple-shaped platinum wire, gauge 19. The hood is again placed to its position and burnished down accurately over the surface and wire staple. When removed from the tooth if the staple does not come out in position it can be placed in the hood, as the imprint upon the gold will show correctly where it belongs. The staple is now tacked with 22 K. gold solder to its place and the hood placed back upon the tooth for final fitting. This is done by the use of a burnisher and a pair of small curved scissors for trimming the edges. Make a perfect fit, then take an impression in compound while the hood is in position; the bite is obtained at the same time, when you think it necessary.

"After the case has been invested and the compound removed, you will have the work shown up in relief ready for the restoration of the lost parts in wax. After this is accomplished, the wax restoration is covered with No. 60 rolled gold, leaving uncovered the lingual portion of the hood which will serve as an opening for the introduction of the gold, when the piece has been cut away from the articulator, reinvested and the wax boiled out, 22 K. solder being used to fill in the gold lined matrix thus formed. The gold hood obtained is now placed upon the tooth and given a partial finish ready to be used as an abutment. Fig. 1.

"2d. We often find it as desirable to hide from view the gold used in connection with bicuspids as we do the cuspids. This is done by making a hood substantially in the same manner as described. We will try to make plain the difference. In preparing the tooth the inner cusp is cut down, not enough, however, to injure the tooth. The groove is made in the same way as described, running between the cusps.

"After making the base of the hood it is placed upon the tooth and an impression taken to secure the bite, using only a pinch of compound, chilling it thoroughly before removing from the mouth. If the gold base does not come away with the compound it is removed from the tooth and tacked to its place upon the impression with a little wax. From the impression make models showing the parts in relief; the base being made of sump and the occluding cast of plaster, using lateral extension plates instead of the mechanical articulator. After separating the cast and removing the compound a cusp which has been stamped for the purpose is occluded upon the model and knuckled against adjoining teeth; then it is filled with 22 K. solder and returned to its position upon the hood, wax being used as a medium of connection.

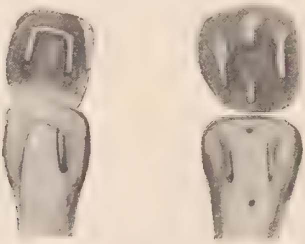


Fig. 1.

"The hood is now cut away from the body of the investment and waxed up to restore the contour. Only that surface representing the lingual aspect is covered with gold, using No. 120 rolled gold for this purpose. To assure a more perfect contour the little angular corners that are visible are covered with very small triangular pieces of 30 or 60 rolled gold, carried to its position upon a moist finger; this is suggested owing to the extreme delicacy of the work. The piece now ready to be invested for soldering shows the wax exposed to view on the mesial and distal surfaces; both of these sides must be left open when the piece is invested to admit of the solder. To attain this result we cover one side with a little wax disk made by pressing a particle of wax between the fingers; when we invest, this side is forced down through the sump until it strikes the slab. After the sump has set, that part covering the wax disk is cut away. The wax is now boiled out, leaving a matrix having an opening on both sides through which a coating of borax is applied; the case is then placed upon a wire gauze soldering frame and the upper opening packed with 20 K. solder. When the heat is properly applied the solder flows entirely through, filling up the under side. In case of failure to do this the piece is turned over and additional solder fused upon this surface to perfect the contour. When the opening is large fill in the space with 22 K. solder or moss fiber gold to prevent the 20 K. solder from running through when fused." (For cut showing hood see Fig. 2.)

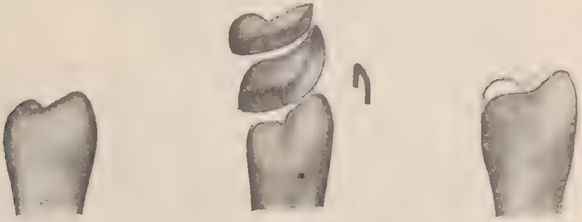


Fig. 2.

From the above extract you will notice that I used the heavy gold foils for all matrices, Nos. 120, 60 and 30 answering the purpose very well, but later had the White Dental Manufacturing Company, Atlanta House, to gauge a specially prepared gold which I liked better. This they found to be .003 of an inch in thickness. I now use this form of gold for backing up teeth, stamping up cusps and for matrices, and .001 is used for covering the wax restoration.

In the beginning I used pins, posts and lugs for anchorage in hood and saddle crowns, but soon discovered that for the majority of individual crowns this precaution was not necessary, depending entirely upon etching the surface with some sharp instrument and burnishing the gold base of the matrix or hood into the groove described. By conforming the base of your crown to a groove you get additional strength, a good anchorage and a guide for better adjustments.

In casting about for a crown to be used as an abutment, it occurred to me that a groove provided with a staple would give the necessary strength to withstand the great strain to which an abutment is subjected. Time and experience has proven my theory correct. I now recommend the staple hood and staple saddle crown as being far superior to any other form of attachment for anchoring bridges or dummies; especially is this so when we are dealing with vital teeth. When the pulp has been destroyed I often substitute a post for the staple. The esthetic and hygienic claim for these crowns does not need to be championed. The greatest virtue which recommends their use when possible to the exclusion of all other crowns or abutments is the fact that where the outer surface of the crown of a tooth is only partially destroyed, the pulp retains its vitality and resorption does not take place around the root, as often occurs where the crown has been amputated or the enamel removed and the crown hermetically sealed within a shell crown.

The cause of this loss of vitality and destruction of bone is a mooted question in my mind. Is it produced from the irritation which results from ill fitting crowns or does it come from the exclusion of the atmsopheric and other influences which have so much to do with life? We know that there is a structural difference in the teeth of animals where there is continual exposure to external influences. The question is one at least worthy of an investigation.

Having said so much in praise of the hood crown abutment I will now endeavor to explain how it can be used in making saddle extensions and how employed in connection with a telescoping hood as an anchorage for partial dentures, having in mind a typical case of saddle extension with vulcanite attachment, which had stood the stress of hard usage for a number of years, being the chief reliance for mastication as the cast of this mouth will show, the patient having lost the molars on the opposite side of the mouth above and below. You will observe that the saddle extension consists of the two bicuspids and first molar anchored to the right upper cuspid.

In making this piece of work the hood crown was adjusted to its place upon the tooth; then an impression from which a model made of sump was secured showing the parts in relief with the hood attached. In making the base for the saddle I burnished a piece of 24k. gold plate, gauge 36, over the alveolar ridge, snugly fitting it partially around the hood at the gingival margin, trimming and shaping it so as not to infringe upon parts liable to become irritated. Now tack a few pieces of 22k solder to the base. To give strength to the work a bar of iridio-platinum, gauge 16, is tacked with 18k. solder to the hood and saddle base, so placed that it will not interfere with setting up the teeth. After the soldering has been done allow the piece to cool down, then check the base with a very sharp pointed lance. This imparts to the gold a roughness which aids as an anchorage for the vulcanite gutta-percha used for the attachment of the porcelain teeth. The hood crown and saddle base thus united and reinforced was placed in position in the mouth in order to obtain an impression from which models were made, giving a correct bite as shown when set up in the articulator; the hood and skeleton extension being removed from the mouth with the impression occupied its relative position upon the cast. I now ground up and occluded the teeth, using vulcanite gutta-percha as the medium of attachment; covering the buccal surface with pink rubber, and the entire vulcanite exposure with tin foil before investing; after which the piece was vulcanized and finished up in the ordinary way and cemented to place within the mouth. Fig. 3 shows a saddle extension attached to a lower bicuspid.

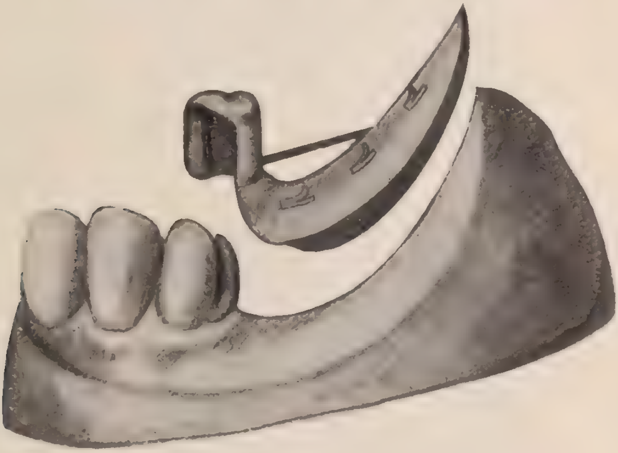


Fig. 3.

The partial denture with the telescoping hood anchorage is a modification of the principle just described. These plates give great satisfaction to the patient as well as to the operator. An ideal case for such a device is one where the six anterior inferior teeth remain intact. The cuspids are provided with staple hoods and these in turn are provided with telescoping hoods made after the fashion of the first hood, the only difference of procedure being a piece of gold plate soldered to the lingual surface of the original hood in such way that the space between the gold plate and hood beyond the solder contact can be formed into a groove to engage the staple pin of the telescoping hood, care being taken that the perpendicular lines of the grooves are made to parallel each other when the hoods are in position upon the teeth, for upon the accuracy of this feature depends

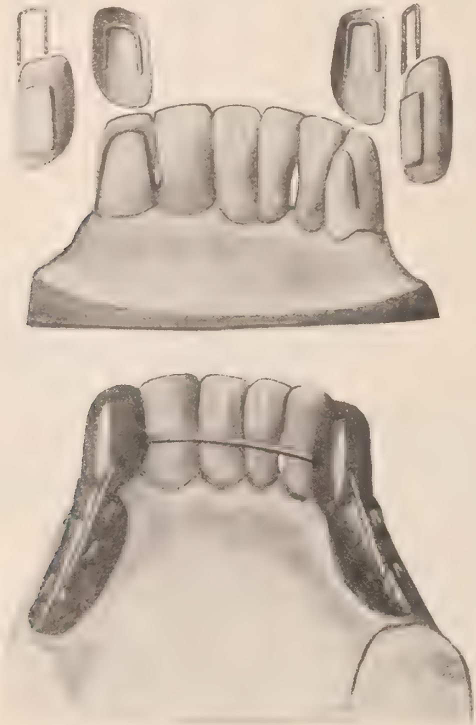


Fig. 4.

the success of the telescope anchorage. The hoods and telescoping hoods are placed upon the teeth in the mouth in respective position, and an impression is taken from which a sump model is made showing the parts in relief. Since we only desire to unite the telescoping hoods we are careful only to have them in place upon our impression compound before pouring the model. The bar connecting the telescoping hoods should be iridio-platinum of size to give sufficient strength, extending at least three-fourths of an inch beyond the hood, so placed as not to interfere with setting up the teeth. A gold base can be burnished up and attached to the hood and bar just as described in making the saddle extension or not, as the judgment of the operator would suggest. After the parts have been tacked together with 18k solder, the entire gold outfit is placed to position in the mouth and a compound impression taken giving the bite. It is now placed in an articulator, models made and the work completed, as before described. From a hygienic standpoint the vulcanite should not extend along the teeth on the lingual surface. The bar connection of proper size will answer all purposes and serve to protect the teeth from decay; we often see where vulcanite is allowed to come in contact with the teeth at this point. Fig. 4 illustrates a case in practice which I mounted and brought with me for your inspection.

By using very thin gold for the base of these saddle extension plates and partial dentures, we eliminate the tedious process of making metal dies and counter-dies for swaging, thereby saving much time and work; where necessary a counter-die can be made of plaster or modeling compound when using thin plate.

DISCRIMINATION IN THE SELECTION OF FILLING MATERIALS.*

BY C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO, ILL.

[NOTE.—This paper was originally read before the Dental Congress at Portland, Oregon, July, 1905, and should have appeared in the transactions of that meeting. The San Francisco disaster resulted in the destruction of the congress proceedings, hence the paper has never appeared in print till now.]

Many factors enter into the selection of a filling material for each individual case, and no one can lay down a rule which will not be subject to variation under certain conditions. It has sometimes seemed to your essayist that writers on this subject have frequently been too arbitrary in their statements, and have failed to consider carefully enough the varied conditions presented. Then again it has appeared as if they were inclined to approach the question from a point of view which had little bearing upon it, viz., with relation to the structure of the teeth rather than with other matters which really present a greater significance. It is not possible at this time to go very fully into the subject of the hardness or softness of the teeth as it relates, or does not relate, to the selection of a filling material; and yet it must be said that this factor is really a very small one in deciding the question. Not only this but in so far as it does affect our selection it is precisely in an opposite way from that usually suggested. The statement is frequently made that gold should not be used in certain teeth because they are too soft. If by this is meant that the teeth are too easily broken down to hold gold or that they are inclined to crumble away around a gold filling, then the argument will not bear investigation. A tooth which is easily broken or which has thin walls susceptible to fracture is the tooth of all others which requires the strongest possible filling material to protect it. Gold is admittedly the strongest filling material we possess and if it is indicated anywhere it is indicated in these so-called soft teeth. Lest there be a misconception in regard to a certain impression among members of the profession that gold cannot be safely adapted to the walls of cavities in these teeth, let it be said that tooth tissue unless abnormally softened is sufficiently hard to admit of perfect adaptation of gold without the slightest injury to the cavity margins provided the margins are correctly formed and the gold properly manipulated.

---

*Read before the Odontological Society of Chicago, Dec. 11th, 1906.

The advent of inlay work has given us a new point of view and a wider range of possibility in our selection of filling materials, but it has also narrowed the mental horizon of some of our worthy practitioners to the almost ultimate ignoring of the virtues of other filling materials which have long since proved their efficiency under certain conditions. This paper is not intended as a discussion of the relative merits of inlays and other methods of filling teeth, but it may be well to call attention at this time to a certain claim made by enthusiastic advocates of inlays. The contention has been urged so frequently and so persistently that the joint between cavity wall and filling material is more secure by the inlay method, through the agency of the cement sealing, than it ever can be when the material is placed directly against the tooth tissue, that many in the profession have been led by the persistent repetition of this statement to accept it as having a basis of fact. Enthusiasm is a glorious force in the furtherance of any reform and the enthusiasm of inlay workers has done great good by directing attention to the possibilities contained in a comparatively new principle in saving teeth. The principle of inlaying cannot be ignored as a most important addition to our available means of remedying the ravages of dental caries. It has a wide range of usefulness, and the pioneers in this work have our especial thanks for introducing it to the profession. It has been the means of saving many teeth which otherwise would have called for artificial crowns, and it has furnished a system of filling teeth by which the artistic possibilities of the operator have advanced to the point where the evidence of his work may be largely hidden from public view. This is an achievement which marks an era in the general advance of dental practice, and for which the profession and the public may well be thankful.

But with all of this there is a reverse side to the picture, and one which must not be ignored. The claim that a better joint may be made with an inlay than with a perfectly adapted and condensed gold filling does not hold good. It has repeatedly been stated and as repeatedly demonstrated that a cavity may be hermetically sealed with gold foil, and this method has the advantage that with a filling so placed there is a stable and practically indestructible material in immediate contact with the cavity wall. That gold as a filling material is effective has been too long demonstrated to be swept aside by the off-hand statement of inlay enthusiasts that no cavity is safe unless sealed with cement. I have seen gold fillings that have remained in place and saved the teeth for more than half a century, maintaining good margins and sealing the cavities for that length of time.

It is true that very many gold fillings fail, and they sometimes fail in a manner to justify suspicion as to the serviceability of the material, but it will usually be found that the failures are due more to faulty technique than to any inherent defect in the material itself.

And this brings up one consideration in which inlay advocates might well have a just argument against the use of gold in very many cases. The fact is that gold to do good service demands the most exacting attention to details in its manipulation, and a high order of skill on the part of the operator. It will not tolerate faulty management, and its exactions are so great that in certain classes of cavities and in some patients it is well nigh impossible to get perfect results. It is in these cases where inlays offer us a most useful substitute, because in the practice of dentistry we are no longer justified in subjecting our patients or ourselves to the nervous strain necessary for the proper insertion of gold fillings in these difficult situations. But where gold can be conveniently and comfortably inserted, and with the technique conscientiously carried out there is no more certain method of saving teeth by filling that has ever yet been dovised.

In the one important particular of maintaining good margins there is no comparison between a porcelain inlay and a gold filling. A well inserted gold filling will show a good smooth margin for years after its insertion, while a porcelain inlay no matter how perfectly fitted will develop at least a small space between the enamel and the porcelain. This space may not extend very far into the cavity or seriously affect the serviceability of the inlay, and yet it is unmistakably there and may prove a subsequent factor in the future permanency of the work. In a somewhat careful study of the condition of porcelain inlays after any extended periods of service it has been observed that the margins are rarely entirely satisfactory. The imperfection may not be noticeable while the tooth is bathed in saliva but by drying the surface the small groove between porcelain and enamel invariably shows and can be plainly traced with an explorer. This relates to cases where the technique has been good, and not to the many instances of glaring imperfections due to faulty manipulation. It is apparently a necessary concomitant of inlay work which does not obtain with gold fillings.

And yet I do not wish to pose in the light of disparaging porcelain inlays in properly selected cases. As has already been intimated these small spaces around inlay margins do not seem to invite serious trouble, but one cannot escape the wish that it were possible to do away with them. There is always the feeling when the explorer passes into such a space that it may eventually lead to failure of some sort. I may say in passing that when the cement problem is definitely solved we shall be able to assign to inlays a wider range of usefulness than at present, and every progressive operator will hail the day when this is brought about.

In the selection of a filling material for each given case there are certain considerations which should exert a bearing on the decision. It is quite impossible to formulate rules which shall be followed without variation, and the great danger is that men are apt to fall into ruts and to use certain filling materials as a matter of habit or experience without stopping to study the particular requirements in each case. Some of the considerations may be enumerated as follows: Character of the material as to indestructibility, accessibility of the cavity, temperament of the patient as to fortitude in having dental operations performed, conditions in the mouth as to susceptibility or immunity, the probable stress to which the filling is likely to be subjected in mastication, the present condition of the teeth as to sensitiveness, the present condition of the patient as to nervousness, the condition of the peridental membrane, the extent of decay in the individual tooth to be operated on, the number of teeth involved—all of these enter into the question and should be considered. There is also one other factor which sometimes has a bearing on the case but which is not often enough considered, and that is the attitude of the patient toward dental operations at the particular time when the work is to be done. For instance the patient's teeth may have exhibited a long and persistent tendency to decay, and the attempt to save them has entailed a serious physical, nervous and financial tax. At such a time if new cavities occur the outlook is so disheartening that to subject the patient to extended or expensive operations is bad judgment, and tends to the temptation in some instances to let the teeth go by default, or at least to resort to crowning. Under these circumstances the operator should aim to make the burden as light as possible by the selection of some material which may be easily inserted and which will not involve much expense.

It is usually not customary to discuss the question of expense in a paper upon any scientific subject and yet in the practical application of this consideration to every day experience it is impossible to entirely ignore it. It is the Banquo's ghost of dental practice, and will not down, no matter how hard we try to suppress it.

In considering the indestructibility of filling materials it must be acknowledged at the outset that gold is the strongest sheet anchor of the profession. Whether used as foil or in the form of an inlay it is the one material which is beyond criticism so far as marginal strength and protective properties to enamel are concerned. Gold has serious limitations but in the one important essential of stability it has greater strength to given bulk than any other filling material we possess.

Porcelain is just as indestructible as gold so far as any action is concerned by the fluids of the mouth. It is not affected deleteriously by any chemical combination capable of toleration by the tissues, and in this respect it is ideal as a filling material. A piece of porcelain will remain bright and polished in an environment which would tarnish almost any kind of metal, and if it were not for its friability and its tendency to fracture along the margin under stress it would be perfect so far as its indestructibility is concerned. In other words if porcelain were as tough as gold and would withstand the same stress in relatively small bulk it would be superior to gold for wearing purposes because it is harder and will not batter or stretch under repeated impact.

Of the other filling materials there is only one that can lay any claim to indestructibility and that is amalgam. Amalgam—aside from copper amalgam—will not dissolve in the fluids of the mouth, but it has certain limitations which should be carefully considered before it is selected as a filling material. It is much less friable than porcelain but much less tough than gold, and in its selection and manipulation this should be borne in mind. Amalgam as manufactured today is capable of great usefulness but it is more exacting in its requirements of manipulation to get the best results than is generally supposed. Amalgam cannot be plastered into a cavity and be expected to give good service in any locality or environment which subjects the filling to hard usage. It is not within the province of this paper to go into the technique of manipulating filling materials and yet in considering the availability of amalgam it must at least be said that within its legitimate range of employment it is serviceable or otherwise according to the preparation of the cavity and the manipulation and subsequent finish of the filling. In other words amalgam is more seriously affected by faulty methods of manipulation than is usually granted.

Its chief use relates to cavities difficult of access or where appreciable bulk can be given the filling. Of no material in use can it be so truly said that it is a "good servant but a bad master." The character of the material and the rapidity with which it may be inserted seems to lead to slipshod methods of manipulation, and this in face of the most pronounced and repeated reference to this fact in society meetings and in our periodical literature. This ultimately has a direct bearing on the skill of the operator who uses amalgam almost exclusively, to the neglect of gold or inlays. Gold with all of the complaint which has been made as to the difficulties of its manipulation has on account of this very difficulty developed a higher order of skill among dentists than ever would have obtained without its use, and this is something not to be lost sight of. A gentleman who is an expert operator and an enthusiastic inlay worker in showing me recently some extensive restorations with gold inlays pointed to a large gold foil filling in a lower second molar and said "I put that in for the mental discipline it gave me. It does me good to insert a difficult gold filling occasionally." And in conversation with another dentist some time since he remarked that an essay should be written on the moral effect of the gold filling, citing a case where he had been tempted to use amalgam but had finally concluded that to be perfectly conscientious he must insert gold. Said he, "It was hard work but after the filling was finished I was a better man in every way for having done it. I was better skilled because of the training it gave me, and I was really a better man morally for having assumed the highest duty presented to me and performing the best service I could for my patient."

But we must, of course, study the effect of our operations on our patients, and in these days of highly wrought nervous organizations we must not always subject our patients to so great a strain as the insertion of large gold fillings would involve. In many of these extensive restorations amalgam or inlays may be used to excellent advantage and with much less nervous tax on the patient.

The accessibility of the cavity is also a factor. There are certain positions in certain mouths where it is well nigh impossible to do perfect work with gold without unwarranted severity on the patient, and unless we can do reasonably perfect work we would better select some material or some method the technique of which is less exacting.

In cases of extreme nervousness of the patient or unusual sensitiveness of the teeth the oxyphosphate of zinc and gutta percha may be employed with good results, provided they are used with the limitations always in view that they cannot be depended on for extended service in the majority of instances. The practitioner should always make a careful study of his patient and should aim to fit the character of his operation to the necessities of the case, avoiding, if possible, undue nervous strain. It is not a very elevating class of practice to fall into the habit of merely patching teeth up with plastics and following this as a settled method of operating, but the plastics are extremely valuable as a preparatory means of checking the decay and protecting the teeth till the conditions are such that more permanent work can be accomplished.

In doing this temporary class of work there is one combination of materials to which your essayist has frequently called attention and which should be employed more than it is. In all large proximal cavities, where the decay extends under the free margin of the gum, if oxyphosphate of zinc is used, there is quite likely to be a solution of the material at the gingival margin long in advance of a failure of the filling at other points. This sometimes causes an undermining of the filling and a recurrence of decay in a region where the pulp is readily exposed, an accident which frequently happens before the patient is aware that anything is wrong, and while the filling is apparently in good condition in other places. To prevent this, gutta percha should be used for the gingival third of such cavities and the filling completed with oxyphosphate. Gutta percha will not dissolve out at the gingival region and it is readily tolerated by the gum tissue. This combination makes a more permanent filling than either gutta percha or cement does alone, and when failure begins by a wearing away of the exposed cement it at once becomes apparent to the patient before recurrence of decay takes place.

But let it be said that all such temporary work should be replaced by more permanent operations at the first opportunity in all cases where the condition of the patient and the peridental membrane will permit it. The habit of relying too much on these temporary expedients begets a careless and slipshod method of operating, and diminishes the high order of skill which is developed only by the concentration necessary for more permanent work.

In short, proper discrimination in the selection of filling materials requires an ever alert study of conditions with the indomitable courage, patience, and perseverance to always do that which in the operator's judgment seems best for the case in hand. Above all things an operator should not become blindly wedded to any one material or one method, because our best service to our patients is to be obtained only through a judicious selection at different times and under different circumstances of nearly all the materials at present under our command.

PRESIDENT'S ADDRESS.*

BY DR. F. G. VAN STRATUM, HURLEY, WIS.

Again the hand of time has completed the cycle of another year, and again we are assembled to discuss that which is near and dear to our hearts; namely, the art and science of dentistry, and I earnestly hope that all of our deliberations, discussions and demonstrations may be of such a high and scientific character that every one who attends this meeting will be more than compensated for his time and trouble.

Why the president of a society of this kind should be obliged to give an annual address, and why the society should be afflicted to listen to mere words, and waste their valuable time, is quite beyond the comprehension of your humble incumbent. If, however, the work and character of this society could be so changed that the suggestions of the president could be made the basis of the work of the society for the ensuing year, it might bring good returns and no small responsibility would rest on the presiding officer to successfully carry on the work as outlined by his predecessor in office, but with the hearty co-operation and assistance of the members of the society much progress and needed improvements of present conditions could be accomplished; and I hope to be pardoned for assuming to call attention to some of these conditions.

It must be evident to every member of this society that the work has been more or less spasmodic and accidental, instead of a constant, steady, onward and upward growth. It may be said that it is no worse in this respect than a large number of other state societies, but that is not a good or valid argument for the continuation of a lax or deficient method or system of our own society. Every member of our executive committee and every ex-member will, I think, corroborate my statement that the hardest part of their work was to interest a sufficient number of our own members to write a paper, give a demonstration or clinic for the benefit of the society, and if it had not been for the generous and able assistance of friends from other states and societies, the meeting of this society would sometimes have been not so successful and interesting as it really proved to be. This is not complimentary to the members of this society and is not as it should be. The executive committee ought to be buried annually under a mass of papers to be read before this society and their hardest and most perplexing work should be to decide which of the papers ought to be read and which ought to be returned or rejected with thanks of the committee, and perhaps some explanation or suggestion from the committee. For example, such as "does not contain anything of sufficient interest to take up time of the society, or is not sufficiently specific, or is simply rehash of something well known, etc., etc., etc." On the other hand, every paper that has been accepted should receive sufficient time to be read and discussed and not simply read by title in order that it may appear in the printed proceedings; that kind of treatment is not particularly gratifying to the author nor sufficiently stimulating to induce him to write another. Every member of this society ought to try and do something that may be of interest or instructive to some other member of the dental profession. In this way only is it possible to raise the general standard of dentistry and discharge our full duty to our fellow practitioners and to the public, and at the same time improve ourselves, for it is an acknowledged fact that the authors of papers usually get as much and oftentimes more benefit from the essay than their hearers. The same is equally applicable to clinicians and persons demonstrating special methods of practice or manufacture of specialties.

---

*Read before the Wisconsin State Dental Society, July, 1906.

Let every member of this society consider himself a committee of one and see to it that he will do something the ensuing year that will contribute to the interest of the society. It need not necessarily be something big or great, but only something of every day practice, and you can find a thousand and one subjects if you will only take the trouble to carefully look into any of them. Write your ideas down on paper and send or take it to some friend for examination and get his opinion, suggestions, or even his severe criticism of it and accept them with thanks. Then it ought to be read before a local society where it can be more fully discussed and any remaining defects removed or changed, and the "Revised Edition" read before the State society. It seems to me that every local society could easily produce one or more of such papers annually and it is self-evident that they would be meritorious, and with a dozen or so of these papers, we soon would attract the dentists of this and other states to such an extent that it would be difficult to find a hall large enough to accommodate them all. If the members of this society, who are also members of local societies, will use their influence to bring about such harmonious collaboration of dentists throughout the state, we would soon reach many practitioners who now remain away simply because they think our meetings are not sufficiently interesting or instructive to warrant their attendance. We, therefore, must strive to attain such eminence that our position cannot be questioned; and that attendance at, or membership in this society, really means something, and stands for progress and high scientific attainments, and there is no good reason to believe, when we have something valuable to offer for comparatively little expense to the purchaser, that we will not find plenty dentists to be glad to avail themselves of such opportunity.

Reciprocity.—I have been told that a number of attempts have been made by the National Dental Association to unify the dental laws of the different states, but that up to the present time very little or no progress has been made, and many years may pass before we can expect anything valuable in that direction. The conditions and requirements of no two states are alike and it is evident that their laws must, of necessity, differ; but there is one condition on which we can all unite and on which we all ought to agree without doing any harm to any locality or an injustice to an individual, and that condition is "Reciprocity"; or the recognition of the right of every person to pursue his avocation in every state of the United States provided he is legally entitled to pursue the same in one of the states. The subject of state rights was permanently settled in 1865, but the rights of state dental examiners have only recently been settled by the Supreme

Court of Wisconsin. I have no desire to comment on any part of that decision or the causes that led up to it; but it is very evident that our present law is largely to blame, and we are indirectly responsible for the law, as this society appointed a committee to draught a bill and caused it to be passed by the legislature and we paid the expense of said committee. Nothing remains for us but to bow our heads in shame if the result is not what we had hoped for. Look at our humiliating position, we have invited men to come before our society whose qualifications in their respective fields are not questioned by any scientific body in the world, to read a paper or demonstrate some particular intricate and difficult method, and teach it to members of this society, but the law that we caused to be put on the statute books, will not recognize their ability to practice dentistry in this state without first passing an examination before a board of their peers. Oh, consistency, thou art a jewel.

Let us rise above little petty hair-splittings and cause an amendment to our present law or an entirely new law to be passed by the next legislature that will make every person who is legally entitled to practice dentistry in any state of the United States eligible to registration, on presentation of valid proof and the payment of a small nominal fee without examination, and then let the Association of Dental Examiners see to it that similar amendments are added to the laws in every other state. Then and not till then can we claim to be working for the general good of the entire profession and extend the glad hand of fellowship to every person who is willing to come here and become one of us.

Officers.—The officers of this society are insufficient to supply the demand of all aspirants and something must be done. This can be accomplished in two ways, to-wit., by creating more offices or by positively insisting on electing new persons to every office annually or semi-annually that would double the number and might answer the purpose, or we might organize another society, say the "Northern State Dental Society" in opposition to the "Southern" and incidentally both rivals of this society; and that would help out some. I could continue in this nonsensical way for sometime without saying anything but mere empty words. However, I sincerely hope you will seriously consider the necessity of filling every office with a new incumbent instead of re-electing the same one over and over again as has often been the case. In extenuation of this practice, it has often been said that a certain person is particularly qualified or fitted for the office; this may be true, but it does not compensate for all the other shortcomings of the "system." In support of this, we may call attention to a person who possessed great qualifications to be president of a bank, and who filled the position very successfully for a number of years but the shortage in the cash and loss to the stockholders could not have been so great if a messenger boy had been elected to the position.

The annual change will not alone distribute the responsibilities, but the honors as well, and will be an incentive to stimulate the officers to give as good a meeting, or if possible, a better one, than any that has preceded it.

Dental Education.—This is a subject that must be dear to the heart of every progressive dentist. as this is the rock upon which our very existence depends and we all ought to be willing to contribute our share, give our time and influence to promote every enterprise that assists or contributes to enlarge the scope of opportunities for the dissemination of useful dental education. Foremost in this line stand our dental colleges, their influence for good is of a two-fold character, they do not alone educate our student, but also improve the standing of the profession throughout the state, and this is especially noticeable in all who have had an opportunity to teach some subject pertaining to dentistry in them. The improvement is very noticeable in some of the members of the college faculties who have steadily followed some subject, and have become quite proficient in that line of work. I therefore beg of you that we encourage this good work so that in time we may have the proud satisfaction, that our state has dentists within its borders who are equal to any and whose reputation shall extend throughout this broad land and whose work shall put Wisconsin on the map of dentistry.

We have lost by death one of the two last remaining charter members of this society, Dr. Charles C. Chittenden, and it seems only proper that your president call attention to his long and untiring work in this society, but in order to do this full justice I will appoint a committee to present the matter in proper form as it is not within me to do it as it should be done.

In conclusion, allow me to express my most heartfelt gratitude for the honor you have so graciously conferred upon me, and I hope that you will forgive any shortcomings and bear patiently with me, and I beg of you to assist me in making this meeting a grand success.

METHOD OF ROOT RESTORATION.

BY W. A. ROBERTSON, D. D. S., CROOKSTON, MINN.

The subject of restoring roots which have become weakened by the ravages of decay, is one which demands the careful consideration of all conservative practitioners, to whom the forceps are only used as a last resort. With the advent of modern antisepsis, the treatment of pathological conditions involving the tissues surrounding the apices of roots, has in the vast majority of cases become an easy matter, so that we will not treat of that in this connection. Taking for granted that the roots have been placed in a healthy condition the question presents itself how may we best restore them to support a crown with the greatest possible hope of permanent success.

For example take the case of a lateral incisor the crown of which has been entirely destroyed by caries and we find the root penetrated to almost two thirds its length, leaving a cone shaped cavity after the decay is removed with only a very thin margin of tooth substance at the cervical margin. The treatment I have followed in such cases with uniform success is as follows.

After removing all traces of decay and trimming the margins as thoroughly as possible, syringe the cavity with warm water to remove any loose particles and moisten the walls. Take a small cone of modelling composition and softening the point force up into the cavity and allow to harden for a moment then removing it, invest the impression of the root in plaster allowing this to set. Having placed a little temporary stopping in the cavity dismiss your patient. When the plaster has become thoroughly hard soften and remove the modelling compound and you have an exact impression of the cavity in the tooth. Fill this full of amalgam, making a small hole through it about where the pin ought to be before it sets. Allow this to set over night then break away the plaster and you have an amalgam inlay that will exactly fit your root. At the next sitting dry out the cavity and roughen the walls with a wheel bur and with a sharp edged file make some shallow groves on your inlay. Mix some cement thin and coat the surface of the root thoroughly with it and force the inlay to place. To assist in doing so make a slight mark on the surface towards the front to make sure you have it in right. When the cement has set drill the hole for the post, which is an easy matter as the reamer will follow the small hole already made.

I prefer the Davis crown for such cases as the pin not being so large does not weaken the inlay, and the reamers furnished which correspond to the size of the pin used insures the strongest support for the crown.

The entire inlay with crown in position can be made out of the mouth by taking an impression and bite before removing the impression of the root which is removed and replaced in position before running. When doing it this way it is necessary to leave the surface of the amalgam a little below the margin of the root as the cement will occupy a little space so that the inlay will not sink to the full depth. You can set the pin by driving it to place with a small mallet while the amalgam is soft, and allowing it to set and then setting the crown in the mouth. If you should wish to set a gold crown on, say, a second bicuspid, the root of which is in much the same condition as the one described above, follow the same method and build the amalgam down below the margin of the root and finishing it to conform to the circumference of the root before setting it in position, and after the cement has set make your crown to fit. There are many places where this principle can be used to advantage but I have only suggested a couple, and others will doubtless suggest themselves. Hoping that this may be of interest and prove as satisfactory to others as it has to me I gladly contribute my mite.

ANNUAL ADDRESS OF THE ILLINOIS STATE DENTAL SOCIETY.

BY DR. ELGIN MAWHINNEY, PRESIDENT, CHICAGO, ILL.

Members of The Illinois State Dental Society—We have assembled for the 43d annual meeting and for the second time since the reorganization of the society. At the outset, I wish to thank the secretary and other officers and committees for their faithfulness and devotion to the welfare of this society during this year.

It is with pleasure and pride that I bring you a word of good cheer. The Illinois State Society is at present composed of the membership of 31 local societies all of which are showing unmistakable signs of great usefulness. The future of The Illinois State Dental Society is indissolubly linked to these local societies and only as they prosper can it hope to fill its highest mission. The welfare of these local societies becomes a question of most vital importance to this organization.

It therefore seems profitable that we should study the needs of these various societies that we may be prepared in every possible way to lend needed assistance. I take it for granted that the first great object of our organization is the betterment of conditions of the people in this great commonwealth. It also seems clear that this can best be accomplished by stimulating and increasing the ability of every dentist in the state. Our highest and most useful work must be accomplished through the efforts of the individual dentists.

This history of this society is the record of a splendid progress which is not surpassed by any dental society in the world. but let us not bow down to the past, but stand erect facing a limitless future with the faith and hope born out of this rich past.

Nearly all of our local societies are still in their formative periods and of necessity many of them are being nurtured by men who have had little experience in guiding associated efforts, so it must not be wondered at if some mistakes have hindered the growth. A few societies have lost in membership for unavoidable reasons, most have held their own, and several have gained.

I wish publicly to congratulate the workers in these societies for their splendid showing. The total membership exceeds 1,375 which fact would make us all rejoice were it not for the fact that there remain nearly one thousand dentists in this state who are still without the fold. I shall be very happy if one outcome of this meeting shall be a renewed effort on the part of all to bring into membership, if possible, all the eligible practitioners of this state.

If you will carefully study the history of our profession for the past twenty-five years you will see that the great advancement in the art and science, as well as the practice of dentistry, has been the result of associated effort of many men in all countries. Among the results of the past years work in all our local societies is the spirit of good fellowship engendered. In many localities where two years ago practitioners avoided each other and considered one another only in the light of bitter competitors, the happiest fraternal feeling has sprung up and all have become ardent co-workers for the common good. There is no friendship so deep or permanent as that which springs from common interests. Life is no longer a hopeless battle in which some are doomed to defeat, but a glorious eternal privilege.

Local societies should be encouraged to hold many social meetings that the barriers of formality may be overcome and the spirit of tolerance developed. To meet around the dinner table frequently is proving a splendid method of cultivating acquaintanceships which rapidly ripen into friendship. There is a tendency toward too many formal meetings at which of necessity from lack of time for preparation the program is poor. Better have one or two splendid meetings a year in which many can take part than six or nine meetings where one or two must carry the responsibility.

To the societies in the thickly settled districts, where several men can easily get together, I would like to suggest the idea of the study club in which each member shall be made responsible for bringing to the society's attention all the recent developments in some subject in which dentists are interested; then by free discussion all members will be kept abreast the times. In this way all will be interested through work and soon come to value their association as a necessity.

It is an axiom that the best way to get and keep a man interested in society work is to give him some work to do, some responsibility he can carry. We grow strong through doing things. Ruskin says, "It is only by labor that thought can be made free; it is only by thought that labor can be made happy."

The pathway to success lies in serving best. You can only help yourself by helping others. A mistake local societies sometimes make is in electing men to office who cannot or do not attend to the duties of such office. The most important committee must always be the program committee, which should be selected with the greatest care. The program must be announced long enough before each meeting to give participants abundant time for preparation. Each member of a local society should be given something to do on the program each year. Programs for the most part should be made up from among the members. I realize that in many localities there is need of outside talent at least once a year; some specialist who can bring a new message on some practical subject.

One of the difficulties that most program committees have to contend with in the smaller societies is the fact that the average dentist is afraid to commend directly or indirectly his neighbor's essay or work, and if he attends the meeting does so that he may criticise and find unnecessary fault. Knowing this, from experience, a man refuses to be set up as a target for unkind criticism, even though he may have a valuable new idea. As men become better acquainted socially this reserve gradually disappears and all soon learn that each has some valuable message for all. Emerson said truly, "Every man I meet is my master at some point and of him I learn."

A careful study of the dental profession in this state as a whole will show that those who do not belong to a dental association of some kind can be grouped into one of six classes.

The first group we call quack, advertisers or charlatans, whose only means of success depends upon their ability to drag the profession down to or below the level of their own ignorance. In this group are some men who can be redeemed. They are there because their early training and environment have been such that they think most of the financial side of dentistry and believe this to be the surest road to success. Many of these men can be redeemed by the power of personal intercourse often repeated. The remainder of this first group should be classed as *pirates*, about whom we need have little concern. The rapid dissemination of knowledge among the people, even in the rural districts, of the modern advances in the science and art as well as the practice side of dentistry, is driving these men out of business, even as the advance of civilization and culture have driven the highwayman and desperado into the forests and caves of the mountain beyond the frontier.

The second group, of those not connected with societies, is composed of those who, having had good advantages as to training, believe they have nothing to learn from association with others, and begrudge the time needed for society work, believing that whatever new ideas are brought out in societies they can get through the journals. They fail to realize the immense value of inspiration and enthusiasm obtained only by touching elbows with fellow workers. They need to realize that they are barnacles impeding the voyage of the ship of progress. To me the greatest value of this state society is the uplift and inspiration received by fraternally clasping the hands of men who have fought and won the same battles I am fighting, "whose morning, noon and night have known the things that I have known." "The best recipe for perpetual ignorance is to be satisfied with your own opinion and content with your knowledge."

The third group is composed of men whose early opportunities were meager and who, for lack of training held aloof from society work. They do not take dental journals and hence are the ones that most need the benefits of societies. We can only reach them by personal contact. They need to be assured that they have no monopoly on ignorance, and that no one has a corner on stupidity. Our only means of getting hold of such a man is by personal effort of those living nearest him.

The fourth group of men, not belonging to our societies, is found among the young men who do not realize the advantages of associations. By environment, home and college training, they may have the ethical seed planted in them, but we must remember that the real ethical sense—that honest action is fundamentally the very best policy—has to be learned in the school of experience by nearly all our young men, and many there be who are shipwrecked gaining all this experience. We should early throw out the life line and bring them in and not wait until the fate of circumstances drags them down.

The fifth group of men who keep out of society work, which I am compelled to believe is the largest group of all, is composed of knockers. They are chronic kickers. They either from ignorance or stupidity will not do anything for the benefit of society themselves nor let anyone else do so. They are afraid some one will be honored above themselves. They knock dentistry as a profession and every one who succeeds in it. They go around with chips on their shoulders hunting for trouble and failing to find it, they usually make it. If, by accident, they get into societies they want to run everything, and failing they spend their energies in trying to disrupt the society. Hubbard says, "In Heaven there are no kickers, in Hell there are none else; that is the difference between Heaven and Hell." While most of the men composing this group are hopeless cases, still I sympathize with them, for I realize that their dispositions are mostly due to deranged abnormal physical make up. We need to realize that men who live by the "hammer" shall eventually die by the "hammer" and not allow them to disrupt our work of happiness. The man who knocks the institutions he is a part of is greasing the chute down which he will slide to oblivion. "The unpardonable sin is to talk discouragingly to human souls hungering and hoping for deliverance." Constructive criticism is what is needed for progress.

There is the sixth group of men, who do not belong to any of our societies, composed of a few men who are not licensed practitioners. It is the duty of members of local societies to report all such in their communities to the proper officer of the law; namely, the secretary of the State Board of Dental Examiners. There should be a reciprocal relationship established between this society and the State Board of Examiners whereby we shall report to them through our secretary all infractions of the law, and give the names of all illegal practitioners that may come to our knowledge, they in turn reporting to our secretary the name, address and probable location and something of the qualifications of each newly licensed practitioner. Our secretary in turn will report to the local secretary the names of all newly qualified practitioners locating in his district.

The Illinois State Dental Society must be prepared at all times to aid in every possible way in carrying on the work in each local society. As a society we should be prepared to send special lecturers, essayists or clinicians to aid local programs and stir up special interest in society work. We should in every possible way encourage research work among local societies.

As individuals we should realize that the most valuable man to society is the one who can serve it best, and who can co-operate with other men. The greater the man the more he desires to bless humanity. The men who do things and not the men who merely talk about things are the men who bless the world. We must recognize the fact that many men now in the society as well as out of it are but poorly prepared to occupy the places of professional gentlemen.

Instead of wasting our time in bemoaning the loss of early opportunities for obtaining an education let us realize that the education of our colleges only prepares one for the study and meditation of all the remaining years, and devote ourselves to the cultivation of wisdom. There is nothing we cannot overcome. We can be what we should. After all has been said there is only one main object in life—the building of character. Character is the result of the cultivation of the highest and noblest qualities and putting them into practical usefulness for the beterment of our fellows.

Education is the process by which culture is attained. As the sun is the destroyer of the night so is culture the destroyer of ignorance and superstition. New ideas are the result of many imperfect efforts before perfection is reached. No man can be sure he knows a thing until he has communicated it to his fellows. I had rather be the stupidest clod of clay of the earth than to possess all knowledge with no one to whom I could communicate it.

When I know that all I have and am has cost midnight oil and much sacrifice and self denial on the part of hundreds now living as well as those dead I must indeed be ungrateful if I am unwilling to aid with the best that in me lies, even if that be in ever so humble a way, the onward march of progress of my profession. Indeed I am not worthy to be called a professional man and should be classed with leeches and bloodsuckers of society, unless I possess this helpful spirit.

The most expensive things in the world are the things you get for nothing. Socrates said, "Fame is the perfume of heroic deeds." Some one else said, "An ounce of performance is worth a pound of preachment," but he who influences the thought of his time influences the thought of all time. We all have a part to play in this game we call life. "No man can hear music for you; no one can love a child or a country or a June day for you, and thus no one can take your place in this gallery where hang the pictures of the living and dead and where all eloquence speaks."

It is a fine thing to be a professional gentleman, but a finer thing is to be a man. Let us gird ourselves with the spirit of helpfulness and resolve to do our best for the good of our society and the uplifting of our profession.

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held March 19, 1907, with the president, Dr. Hart J. Goslee, in the chair.

Dr. Charles L. Alexander, of Charlotte, N. C., read a paper by invitation entitled, "Methods in Prosthesis Which Have Developed From the Gold Inlay."

DISCUSSION.

Dr. W. H. Taggart:

Mr. President—This is a rather hard paper for me to discuss, because a purely technical description of the process is difficult to follow. However, I am very much pleased to see the results that Dr. Alexander has given us, and I also wish to accentuate what he has said with reference to the retention of bridges with inlay attachments.

It is somewhat of a question in the minds of a great many dentists as to who was the inventor of the process of making an inlay by this method. It is between Dr. Alexander, as I understand it, and Dr. Carmichael, of Milwaukee, and I think in this section of the country, where we are all acquainted and have seen Dr. Carmichael's method, we will possibly better understand the description of this process by calling it the Carmichael attachment. It seems to me, the difference between the two methods is this: Dr. Alexander's method consists in cutting the grooves mesially and distally and across the occlusal surface, if it is a bicuspid, and fit to that a staple; while Dr. Carmichael's method is to cut the same grooves, and into those grooves he burnishes a thin metal, and puts a staple on top of that or wires to fill the grooves. Dr. Carmichael claims that he gets a much better fit into these grooves than one can by the use of a staple alone, which looks plausible. The method no doubt is a good one. I have quite a number of abutments with this Carmichael attachment, and the abutment on the posterior tooth has been a crown, and I have had a number of them where the Carmichael attachment would stand long after the other abutment would give way, showing that the grasp that this attachment has on the tooth to which it is attached is stronger than the attachment of a crown to the root, and the more I have to do with inlay work the more I find a properly constructed inlay, with two or three small pins running into the tooth, seems to furnish a stronger attachment to that tooth than a crown made with a band.

I have in mind two cases where an anterior attachment was made with inlay, and a posterior one with crowns, and the crowns were made as well as I knew how, and as time went by and the bridge would loosen, the loosening invariably came from the crown, and I have yet to see an attachment from an inlay loosened up, if properly made. Remember, you cannot make an inlay against a flat surface and put the strain that necessarily goes on it and have it stick; you must have more attachment to the root than one plain surface against another, but if you make proper shaped undercuts, or in lieu of these use little pins, from the sixteenth to one-eighth of an inch long, two or three of them distributed over different surfaces of the teeth, you will often be surprised at the strong attachment of the inlay to the tooth.

There are some criticisms I would like to make in regard to the models that have been passed around, and in making those criticisms we all understand that they are not personal, but are simply in the nature of a difference of experience. I would object to making a saddle bridge and attaching it to a cuspid tooth, carrying two bicuspids and a molar. The principle is wrong. In some mouths there may be reason why they can be kept clean, but in the average mouth such a bridge would be filthy. The cuspid tooth is such a valuable one that I would dislike to take chances of loosening it by having as much leverage against it as that kind of bridge would indicate. The leverage against that tooth would be fully an inch long. I believe in keeping the long end of the lever on the side of the cuspid tooth, because it is sure to be a good abutment later on when the patient needs more teeth than he has now.

I do not know of anything else to say in regard to this paper except to comment favorably on the execution of the work. I think we would almost consider that there was an unnecessary amount of work on these lower partial cases that are attached to the lower cuspids. In view of the fact that Dr. Roach has such a wonderfully clever attachment, it seems to me it makes a much better attachment than the one that has been shown on these models, and with an infinitely smaller amount of work as compared with that one. Dr. Roach's attachment for lower partial plates to my mind is almost ideal, and while that phase of the subject has not been broached in the paper, I feel it is our duty to call attention more forcibly to the attachment that Dr. Roach has, in view of the fact that one for a similar purpose has been shown. I do not think there are any other comments I wish to make. (Here Dr. Taggart, at the request of Dr. Alexander, described and illustrated the Roach attachment.)

Dr. B. J. Cigrand:

I am very glad to have the opportunity of saying a word or two regarding the practical side of this work, as it was my good fortune in 1897 to see practically the same work exhibited and demonstrated by Dr. Alexander at that time at a tri-union meeting in Baltimore. He did not go into the work so extensively, yet the principle involved is practically unchanged, as you see it here tonight. He has kept at this work in his private practice ever since. He was very enthusiastic at the time regarding this work, and I find today that he is more enthusiastic than ever. So Dr. Alexander brings to us something that is not only new, but serviceable, and something that has borne the test of actual practice.

I quite agree with Dr. Taggart that we are somewhat at a loss regarding the priority of the idea. Most of us in this section of the country are led to believe that it is a Carmichael idea. Much of what we attribute to one man very often belongs to another, in testimony of which I have only to say that when Dr. Taggart and I spent ten days in the patent office at Washington, looking up matters of priority of inventions in crown and bridge work, we found a great variety of duplications, and many patents were issued to people who presented the cases, when the real inventor was not the one who was tabulated or mentioned on the books at Washington. We are not here tonight to fight out the matter of priority, and I am very glad that Dr. Alexander has been so modest as to say in prefacing his paper that it is unimportant who the man was who gave us the thought, just so long as he is bringing to us something that is serviceable, that is extremely liberal, generous, and charitable all along the line.

Dr. Alexander's method differs from that of Dr. Carmichael, and I have a model of Carmichael's method on the same subject. Dr.

Carmichael cuts grooves on the side mesially and distally, and then he adapts gold or platinum into the groove by burnishing it, and after he has the tooth in that form, and has adapted the platinum or gold to the tooth, he fills the groove temporarily with hard wax, and then tries to see if it removes itself readily without changing. He invests it, and winds about the groove where the wax was a piece of pure platinum in the form of wire, and practically a piece of the wire on the outside of the burnishing, and I believe Dr. Alexander puts that same process on the inside of the burnishing.

Dr. Alexander:

In the beginning, I first did exactly what Dr. Cigrand has mentioned, burnished gold into the groove, without the wire on the outside of the burnishing, but it occurred to me that the inside was the place for that wire, and I have stuck to that method ever since.

Dr. Cigrand (resuming):

I think the first attempt in this direction was made by Wilbur F. Litch, of Philadelphia, in 1888, when he anchored a bridge from a second bicuspid to a cuspid, swinging the intermediate first bicuspid, and getting his entire anchorage on the lingual cusp and groove of the second bicuspid and placing a double-headed pin into the cuspid. A description of this can be found in the *Cosmos* of 1888; though a great step in the right direction was made by Dr. Alexander in 1897, and later on we have Dr. Bing practically following up with the same idea.

Dr. Alexander has been free and fearless in advocating new ideas. He has asked a question in the proper spirit, Why do the pulps of teeth that have telescope crowns become destroyed or lose their vitality as soon as they do? Is it because of a lack of atmosphere? He does not attempt to answer it, but it is a phase of the subject that deserves some consideration. Whether the theory advanced that it is due to grinding down a tooth is true or not, I do not know. Whether it is due to the constant grinding and irritation produced by burs that causes the destruction of the pulp of a tooth when the crown is put in position, or whether it is the presence of arsenic in the cement, remains yet to be proven.

There are so many things that the essayist brought forth regarding the necessity for greater care in crown and bridge work, and advocating the greater use of partial crowns, that his paper is really a revelation. I believe we should use partial crowns more frequently than we have done, and should avoid the telescoping of teeth with gold shells.

I do not wish to take up any more time of the society in discussing the paper, for although we may differ with the author in some things, he has nevertheless brought to us an interesting and instructive paper, and his work demonstrates the principles he has enunciated. Although Dr. Alexander comes from the South, we welcome him as an honored member of our profession. Those of us who have visited the South have felt the effect of the hospitality of Southerners, and I am sure I speak the good will of every man present when I say we are pleased to have the doctor with us and we welcome him here with all our hearts.

Dr. E. M. S. Fernandez:

If I may permitted to, I wish to say that the paper Dr. Alexander has had the kindness to read to us this evening, is certainly one of the most excellent papers this society has ever listened to. However, with all due respect to the essayist, I wish to differ with him in some of his ideas.

The cement we have at present for our bridge and crown work, although we can apply it very nicely and get pretty good results from its use, it is not the ideal cement for such work and less so for inlay work. An ideal cement for inlay and other kinds of dental work, it seems to me, should be a chemical in liquid form, transparent, non-absorbent, insoluble after crystallization, and crystallized at the will of the operator by any chemical means, and should possess an extreme degree of adhesion.

In regard to the method of making gold backings in two pieces and allowing a space between and filling the space with solder, I have found a very difficult and unreliable procedure.

An easier and more satisfactory method, I believe, is to swage backings one over the other and solder them together, making as many as the thickness requires.

When burnishing a piece of gold plate to a lingual or other aspect of a tooth a good practice is to place a piece of silk ribbon over the gold and carry said ribbon around the tooth so as to have both ends meet on the opposite side and holding them firmly with fingers, thereby holding the gold plate in place. Under this silk you can burnish the gold with very little trouble.

The use of what we call an open-face or cut-out front crown I consider a very bad practice. I would object to the use of any uncemented shell crown for the purpose of holding a removable bridge, for it means destruction to the supporting natural tooth, unless the shell crown is to slide over a cemented crown or post.

I regret very much that the time I had to study this paper was only one day. I consider the subject so important and the paper so worthy of discussion that I would like to have had at least a month to devote my attention to its study, in order to be able to extend the essayist and profession the courtesy I owe.

Dr. F. E. Roach:

I take it, Dr. Alexander is not here for the purpose of having bouquets thrown at his work and his paper. There is much in the paper that I can heartily endorse; there is also considerable in the paper I can most heartily condemn. I admire courage in any one; I admire a man with the courage of his convictions, and Dr. Alexander has certainly demonstrated this one quality to my mind very clearly this evening. I know, as you all probably know, that Dr. Alexander took the position many years ago in favor of partial crowns serving as abutments for bridges in the face of the opposition of practically the entire profession at that time. At that time we were not prepared to receive and believe that it were possible to place upon teeth in the mouth these partial restorations and secure them to place with cement, and have these cases remain for any length of time and prove satisfactory. Dr. Alexander had the courage of his convictions and I believe that was a strong point in his work. He had the courage to advocate it and has stood for that ever since, and it should be exceedingly gratifying to him tonight to know that the majority of the profession have accepted and are rapidly accepting the inlay principle of filling teeth. Just here, I feel that possibly I may repeat what I have said many times before, that I believe the day will come when the inlay method of filling teeth will be the popular method, and will be the most universally used of any method we will practice.

Many members of the profession today believe that cement is a weak point in these inlays and partial crowns. I maintain that if the work is accurately fitted and accurately adapted it is the strongest point. It seals hermetically the joints of these inlays, and it is a strong point in their favor.

There is practical value to this paper. There is good in it. What I object to is the broad claim he makes. He makes the flat-footed statement that these partial crowns are par excellent; that they are superior to any other method of securing or of anchoring inlays. I object seriously to that statement.

Dr. Alexander:

I think I said, "when possible."

Dr. Roach (continuing):

I do not think you qualified your statement, and I would like to have you modify your statement in that respect.

There is a place for these crowns, but, like the porcelain jacket crown, they should be rarely used. In Dr. Alexander's hands, with his skill, ability, and expert manipulation of these materials, he may get the results; but I question the universal adoption of them by the profession generally. I do not believe in claiming too much for any particular kind of work. I feel possibly that this particular work is a hobby of Dr. Alexander, and that he is riding it hard, and I object to having it put in such strong terms.

As to the bridge that the Doctor cements in the mouth, I feel I cannot pass this without offering a very emphatic protest. I think there is no doubt, but what we are coming to the prophylactic method of saving teeth. We are all trying to practice prophylaxis, and with this method the doctor is using it does not seem possible we can practice prophylaxis, and it is beyond me to understand how this can be done and have the mouth clean and healthy. There is a little inconsistency in Dr. Alexander's position; he is claiming in the beginning of his paper that this crown is very much more sanitary than other crowns, and winds up with recommending this unsanitary bridge. I merely mention this as an inconsistency in the doctor's paper.

There is one feature in regard to the lower partial that I most heartily endorse, and that is the use of wire connecting the two sides. I have been using this for many years, and I find it the most satisfactory method of putting in partial plates I have ever used.

Dr. Everett X. Jones:

The discussion seems to have centered around the priority of this invention, and I heard some one say tonight that Dr. Alexander designed this attachment in 1893. I had the pleasure in 1891 of seeing this system demonstrated in Milwaukee. Dr. Carmichael's system of making this attachment, as has been described tonight by one of the speakers, was first to burnish gold around the lingual surface, and then put in a platinum wire as a staple. Now, to my knowledge—and I have had considerable experience with the Carmichael attachment—Dr. Carmichael does not advocate that particular system. In the first place, he burnishes his gold into these grooves, finishes one side first, puts it back again, burnishes it again, finishes that side, and finishes between the two grooves. When his attachment is finished there is about as close an adaptation there as you can get in any inlay of any shape in any cavity you can burnish into. I am heartily in favor of this attachment and I have used it in my own practice for many years, and where I can find it possible to put in this form of attachment the doctor has shown us tonight, barring a few mechanical details, I use this system in molors, bicuspids, cuspids, etc. I find in an experience extending over ten or twelve years it has given me better satisfaction than any banded crown or full crown I have had any dealings with.

Dr. Truman W. Brophy:

I have enjoyed the paper Dr. Alexander has read this evening. I am very proud of the fact that I belong to a society which is able to present the array of talent that has been displayed in the discussion of this valuable paper.

While I do not know very much about inlay work, I desire to state that I was won over to it chiefly by the essayist, because a number of years ago I had the pleasure of seeing in the city of Atlanta, Georgia, a patent for whom he had adjusted many large and perfectly adapted inlays. The work was so beautiful and the preservation of the teeth seemed to be so secure, I felt inlay work would be extended among the members of the profession, and that it would become one of the fixed procedures in the practice of dentistry, and during many years since I saw Dr. Alexander's work I have watched with interest the development of it in our own country and in Europe.

There is another matter of which I am very proud, namely, that a member of our society has distinguished himself recently in bringing out a new method of procedure in the construction of these inlays, and has won for himself not only the applause of the people of his own country, but his article has recently appeared in a French journal in its entirety, with the favorable comment of the members of the profession in that great country. I believe that the work which has been done by our fellow member, Dr. Taggart, and by Dr. Alexander, and the gentlemen who have spoken this evening, all of whom have won prominence in this special field of work, will be extended throughout the entire world, wherever dentistry is practiced.

I am proud of a society before which this subject has been so ably discussed.

Regarding the work that has been done by Dr. Alexander, we have all enjoyed his coming from the Southland, and we extend to him the same cordial welcome which is always extended to us when we visit his section of the country.

Dr. E. J. Perry:

I have not had an opportunity of seeing Dr. Alexander's paper, and I could not grasp his ideas exactly as he read it, therefore I have some timidity in discussing it, although there are several points which I would like to speak of.

It is a most excellent paper, because there is so much fault to be found with it. (Laughter.) The only thing about the paper that I feel should receive severe condemnation is the fixed bridge. I cannot see how it can be dignified by the name of a bridge. Now, I understand a bridge has piers and abutments, but it appears that this only has one abutment.

Dr. Alexander:

It is only a saddle extension, not a bridge.

Dr. Perry: With all due respect to the essayist, I think a saddle extension, carrying a molar and bicuspid surface, is an abomination. I cannot see how it can be otherwise, and when we have methods that are so vastly superior to that, where a removable bridge can be made so easily, it seems to me that a saddle extension should be relegated to the obsolete things.

The Carmichael attachment, or the Alexander attachment, which ever it may be, beyond the question of a doubt is a splendid thing. Many modifications of it have been made, or can be made. That a partial crown should be used wherever it is possible, instead of a gold banded crown, there can be no doubt. Every conscientious operator seeks to have engrafted upon the roots of molar and bicuspid teeth gold crowns. Wherever possible, he avoids putting a band around the root of a tooth, so that the inlay attachment is a substitute for this, and it is my opinion, after some experience of that kind, that it is firmer than any full gold crown.

With the rest of the members I feel grateful for his coming to us and reading this paper. He could not expect us to indorse it wholly. If we wanted to condemn some things advocated in the paper, he expected we would do so. Here in Chicago we speak plainly. But we love Dr. Alexander for coming to us, and the society is to be congratulated on what he has given us.

Dr. Frank H. Skinner:

I have been using the method of saddle extension that Dr. Alexander has described for eleven years. I did not have much confidence in them at first, and have never put one in without telling my patient it was an experiment. I tried one in the upper jaw and it was a failure. I have not had, however, a failure in the lower jaw. I have attached them to the cuspid or the first or second biscuspid, and do not care how heavy I make them. I use a good, big, broad saddle, burnish it well to the tissues of the ridge with my thumb and fingers, take the bite and put the teeth on. The first one I put in eleven years ago. I saw it six months ago and it is just as clean and healthy as it was the day I put it in. When conditions are favorable, i. e., when complete absorption has taken place and there is a good firm, healthy root to anchor to, I do not think there is anything which gives more satisfaction than an extension saddle to anchor firmly the lower teeth.

Dr. Perry:

How many teeth does the bridge carry?

Dr. Skinner:

Two, three or four.

Dr. Perry:

What about the odor from it?

Dr. Skinner:

As far as my experience goes there has not been as much odor from this plan of replacing lower teeth as is caused from the unhealthy and frequently pyrrhoea conditions usually found where a partial plate has been worn for any length of time. I do, however, believe that this condition will not occur where a wire and the Roach attachment is used, for by its use one can avoid causing pressure on the soft tissue between the old style make of partial plate and the remaining teeth.

Dr. Perry:

What is it that resists the pressure of the gum on the teeth?

Dr. Skinner:

To guard against that I use a large saddle.

Dr. Perry:

If the gum should spring, what then?

Dr. Skinner:

I extend it clear back to the angle of the jaw always; I get a good, big, broad bearing there.

Dr. Perry:

I do not care how broad you get the bearing there, the gum is likely to spring.

Dr. Alexander:

If Dr. Perry will tell me a better way to deal with such a case as I have mentioned, I will be much obliged to him.

Dr. Perry:

If I were to treat that case, I would use a Roach attachment. I have a score of such cases, and I supply the teeth on the other side of the mouth as well. I may not understand the model that has been passed around. You have three teeth, I understand, on one side?

Dr. Alexander:

There is no tooth above or below on the other side. The teeth on the other side may be worth putting in a lower or a partial denture below.

Dr. Perry:

What is the use of a man having two shoes and of only using one of them in walking? (Laughter.) The first bicuspid is an artificial tooth, is it not?

Dr. Alexander:

Yes, sir.

Dr. Perry:

That would make it still easier to use a Roach attachment, with frame across the roots of the molar.

Dr. Homer A. Drake:

I would like to say a word or two about one point that has not been mentioned in cases where this attachment is a failure. I speak from sad experience, after having used these attachments, more or less, for twelve or thirteen years. The point is this: If you have a cuspid tooth that is very short, beware of this kind of attachment. You must have a considerable length of tooth, and then you are all right, but if it is short, it won't do at all. It will come loose every little while. I consider the attachment a good one, however, where the tooth is long.

Dr. Hart J. Goslee:

It has been suggested that the chair take part in this discussion. The chairman would be pleased to do so but for one reason. Some of his friends came to him shortly after his election to the presidency of the society and announced that he was placed in this position because they wanted to keep him quiet for a year, hence he hesitates to enter into the discussion.

There are a few points, however, which I would like to speak of in connection with this subject. I do not think the question of priority of this atttachment entered into the essay at all, or even into the mind of the essayist, and I want to call your attention to the fact that he has never in any of his remarks or writings referred to this form of attachment as his own. He acknowledges that Dr. Wilbur F. Litch probably first suggested it in 1888, which is a matter of public record, as Dr. Cigrand has said. This form of attachment was similar to the one now utilized by both Carmichael and Alexander, and has been illustrated in text-books for many years.

The one thing I want to criticise most of all is the fact that the essayist recommended this form of attachment as an universal means of anchoring fixed bridges. It is not by any means universal, from my viewpoint; neither is any other attachment, because when we are working under such varied conditions as we encounter, we cannot lay down any set rules as to which particular type may or may not be universally indicated in any particular class of cases.

I think that this is a good type of attachment, when indicated, and when properly adapted, but only in such instances would I think of employing it. The necessary destruction of the crown of a tooth such as would be demanded by this type of attachment for an upper central incisor with large contact points, for instance, and such as would make it possible for the attachment to slip on and off easily, and yet to cling firmly to the neck, would mean an extensive mutilation of the tooth, and if I may have the model that has been passed around, I will call attention to a weak point in this attachment as applied to any tooth. I call your attention to the line of junction between the root, the gum and the attachment. This is the vulnerable point, where decay will invariably start, and where nine-tenths of our failures in the use of this type of attachment occur.

One thing I do approve of is that the essayist recommends the employment of this type of attachment whenever he can, and in preference to many other types. It *is* a far better attachment than open-faced crowns, and better than those thin plates that we see attached to teeth with two or three little pins. It is a medium between a crown and an open-faced crown, or other types similar to that to which I have just referred, and in such instances its use is practicable.

I agree with Dr. Drake, who said that in the case of a short cuspid tooth we cannot successfully use this attachment, and have had and observed several failures in this particular class of cases.

There are many phases of this subject that one could discuss but without attempting to cover them all, yet I cannot sit down without saying something about the extension bridge that has been shown and advocated. A saddle bridge, in my opinion, is all right, provided it is well adapted to well-absorbed tissues, and attached at both ends, but only in such cases is a saddle practicable.

The doctor started out in his paper by emphasizing the importance of hygienic construction in bridge work, and told us how we should form the interproximate spaces between the gums and necks of the teeth, so that food products could be taken care of nicely and the gums kept clean, all of which is proper. But such a bridge as this which he shows cannot be kept clean. The tissues upon which the posterior end of that bridge rest are soft and yielding, and hence this end of the fixture will yield more than the abutment end. It must yield under stress upon the extreme end, and in porportion as it does food will work underneath and therefore it absolutely cannot be kept clean.

Dr. Skinner referred to three or four teeth being carried by an extension bridge. The only thing in his remarks that impressed me favorably was the fact that he said he carried the extension back as far as he could and rested it firmly against the tuberosity, particularly in the lower jaw. This would make such cases more favorable because the amount of soft tissue covering such places is less; hence the saddle rests on a better foundation and, therefore, there is less give to it. Thus one might use a saddle in such cases because the posterior end could not give for the reason that it rests on harder tissue than we find in the region of bicuspids and first molars.

Dr. Perry was asked by Dr. Alexander how he would deal with such a case, a model of which he had passed around, and Dr. Perry said he would use a Roach attachment. He meant what I am going to illustrate a little further: that he would make a *"removable"* fixture and that is what I should do. I should put a Roach attachment comprising simply a ball with a shank to it, which is threaded, in the cuspid tooth, and make a removable fixture. In that class of teeth where you would not want to use this form of Roach attachment I would use simple clasps, make a saddle for both sides and join the two supporting the artificial teeth with a wire in the lower jaw, or a narrow heavy strip in the upper jaw, and you would have a fixture which would be securely attached, removable, and one which could be kept clean.

Just a word about cement. I am inclined to the belief that cement in the application of gold and porcelain inlays is not necessarily a weak element. I think, wtih some of the other gentlemen. that it is a strong element. When a well-adapted filling is mounted with cement, provided everything is done under favorable conditions. the walls of the tooth are better protected, recurrence of decay is prevented, and the color is preserved. In this connection I want to say that I recently had occasion to remove a gold inlay that was put in the mesio-occlusal surface of an upper first molar on the left side of the mouth by Dr. Ames thirteen years ago, and that I had to take a chisel and mallet to get it out. It was a solid inlay, and the cavity was not prepared as we would prepare such cavities today, but it had done good service for thirteen years, and upon a masticating surface, too. While I could get the end of an explorer between the gold and cavity margins, I could not pass it very far, and there was not a vestige of decay underneath that filling.

I cannot quite agree with what Drs. Cigrand and Taggart have said about an inlay being a more permanent operation than a crown, for I have always felt that an artificial crown, if it is properly adapted, is about the most permanent thing we do, and I still think so.

Another feature which should not be overlooked is that of adapting gold to the mouth by swaging on a good plaster model. Often, in partial cases, where we use a vulcanite attachment, No. 34 or 36 gauge pure gold will answer the purpose, and this can be swaged nicely with modeling composition as a counter die on a good plaster model. It will save us the trouble of making a die and counter die, and the adaptation will be equally as good if we use pure gold, and have it thin enough.

In conclusion, Dr. Alexander, I want to say in behalf of the society and for myself, personally, that while we do not agree with everything you have said, we have nevertheless enjoyed your paper and your presence with us, and we hope that you will come back again some time.

Dr. Alexander's paper was further discussed by Drs. Sydney J. Knowles, A. William Feltman, and E. M. S. Fernandez, whose remarks had particular reference to blackboard diagrams and illustrations.

Dr. Alexander (closing the discussion):

I feel proud that my paper has brought out such a free discussion. I did not expect that all of you would agree with me in what I had to say; in fact, I readily admit that some of the points made by my critics are well taken, especially as regards the extention denture. I do not advocate that, as a general thing, at all. For some time I have been giving it a trial, and after doing so I found, much to my surprise, that it was not unsanitary when properly made and that it filled a want we often see presented in some mouths.

It would take more time than I have to reply to the criticisms that have been made tonight, so I will not attempt it. I will only refer to one or two points.

Drs. Drake and Goslee do not see why it is possible to use the staple hood attachment in a short cuspid tooth. I would not recommend it for a short cuspid tooth. I would recommend a pin hood instead of a staple hood, which is practically the same thing and which would be as satisfactory as a staple hood would be where the tooth is longer.

It seems to me the impression has prevailed with some of you that I am an extremist in my position on certain points offered tonight. This is not the case, and in recommending this hood I said, or should have said, I do so to the exclusion of all others, where possible. I do not wish to be considered an extremist, and if the wording in my paper is not clear I will modify it, because I agree with you that this hood has a special place, and should not be used in every case. I recommend it most heartily for all teeth having a live pulp.

Nothing remains for me to do now except to thank you all for the interest you have shown in my paper and for your kind words of commendation.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held December 11, 1906, with the president, Dr. George W. Cook, in the chair.

Dr. C. N. Johnson read a paper entitled "Discrimination in the Selection of Filling Materials."

DISCUSSION.

Dr. J. W. Wassall:

It is a very great pleasure to listen to a paper so well thought out and so beautifully written as is this by Dr. Johnson. He has taken a very good and a very conservative position, as of course we expected he would, with regard to inlay work, and I think on the whole a very proper one. He perhaps leans a little too strongly to the gold foil filling, and I for one would take issue with him as to the comparative merits of gold foil fillings and inlays as they are found, not as he pictures them theoretically. When he says that the joint of a well-made inlay is no better than that of a perfectly made gold filling, no one will disagree with him; but there are very few perfectly made gold fillings in difficult cases. And it is the difficult cavities we meet oftenest, and the ones which require the greatest skill in order to be made perfect and to stop caries. How few men there are who have lived in practical dentistry and have made the good gold fillings that Dr. Johnson refers to, and which we picture in our mind when he talks of the difference between gold fillings and inlays. You can count them on your fingers. And what did ideal gold fillings mean to the patient? It meant perhaps half a day to one operation. Dr. Webb, Dr. Allport, Dr. Cushing, Dr. Carpenter and Dr. Johnson himself must have taken this time to make one of these beautiful, perfect gold fillings. It is not done in these days, and if it is done it is a cruelty to the patient and an unnecessary waste of your own energy; a waste of your own life and your patient's time. It is not necessary because there are other things to take the place of it. I say that as gold fillings are made, they are not up to the standard the essayist would like to have, and which only compare with inlays; either gold or porcelain.

What Dr. Johnson says about discrimination in the use of plastics I am in hearty accord with, and there is a constant place for them. They are of great utility where there has been recurrence of caries; after good operations have been done or indifferent operations have been done, a recurrence of caries where the major part, for instance, of gold filling stands intact with recurrence of caries at the cervix. There is a place for plastics; the combination of oxyphosphate and amalgam is of great service and will prolong the life of the tooth. It is something I make use of under just the circumstances the essayist has spoken of, whenever it seems called for. I have enjoyed the paper exceedingly; it is always a very great pleasure to hear Dr. Johnson read one.

Dr. L. L. Davis:

In listening to the essayist this evening I find but one exception that I can take to his paper. There is but one exception I can take to the gentleman who followed the essayist, and that is in regard to the use of plastics. I cannot see why dentists today will persist in the use of cement filling in proximal cavities for temporary work. Even if it is for a few months I cannot see why they should use cement for that purpose. A plastic filling is necessarily temporary and it is expected it will be renewed in six to twelve months, at the outside. The use of cement filling in any of the proximal cavities I think is the very worst piece of work a dentist can possibly do. I am surprised that Dr. Wassall should say he never used gutta percha in the recurring decay that comes under large gold fillings, because that is absolutely the only thing that will stay there. Cement will not stay there. The only thing that will stay and make a good joint and remove all possibility of decay is gutta percha. Where it is necessary to insert a plastic filling in one of these proximal cavities, no matter what the circumstances may be, ninety-nine times out of a hundred gutta percha is indicated. In the first place, in all probability the decay has extended so far, if it reaches up to the occlusal surface, that the tooth next to it has fallen into the cavity and you have not space. There is no easier way of obtaining the proper intraproximal space than by putting a gutta percha filling in that cavity and rendering it good for three to six months, or even a year, and by the time you get ready to put in the inlay or the gold filling you have the proper amount of space necessary to put it in.

Dr. C. S. Case:

I knew we would be sure to have a very good paper tonight from Dr. Johnson. He is one of the men who has the courage to state his own convictions, his experience and standpoint, and he usually gives it to us right from the shoulder.

There was one thing I was somewhat surprised that he did not mention, and that was in regard to the man behind the gun. A material that is meat for one man is pie for another and destruction for another, and I do not think it is possible for us to advocate any one material as the very best or the second best, and so on down. And yet when we think of the man behind the gun; a man may get the best out of a poor gun that that poor gun is capable of and yet if he had a little better gun he would shoot a little more perfectly. I have seen a great many men who would put in a beautiful amalgam filling, perfect, fine in every particular, one that was lasting, one that was all right, and yet another man attempting to put in an amalgam filling would drop into a slovenly way about it, as a man said to me one time in Jackson, Mich., when he had made a very wild statement as to the number of amalgam fillings he had put in that afternoon. I said: "I don't see how you could get over the ground with that number of amalgam fillings." "Why," he said, "all you have to do is to take out the decay and put in the filling. What more is there to do?" Yet that man would make a beautiful gold filling and take great pains in regard to the borders, etc., and get everything perfect. But when he put in amalgam he did nothing to it but take out the decay and chuck in the amalgam. I have seen amalgams made by Dr. Pruyn that if they were gold would do great credit to any man; the contour, building out, preservation of the interproximal space, everything of that kind was simply fine. Dr. Pruyn of course could put in a fine gold filling, too. So it goes: we find men who are advocates of porcelain fillings; they do a great deal of that work and many become very proficient in the art, far more so than other men, possibly, who do not have the same experience. They see things about them in regard to their excellence and their utility that the other man whose experience has been largely with gold fillings does not see.

I am surprised that today there is not more said about tin filling. When I was in the practice of filling teeth I considered tin a very fine filling, especially near the gingivial borders of teeth in proximal cavities. And particularly the filling that was invented by my old friend Dr. Jerry Robinson. I do not know what became of that material in the market. It used to work very smoothly and plastically. Take that in connection with other fillings, put it in first around the gingivial borders, finish it off with gold and the gold will adhere to it very perfectly, giving a perfect masticating surface, and at the same time a filling that could be put in easily, quickly and readily.

I think Dr. Davis was mistaken in regard to Dr. Johnson's statement of putting in a cement filling along the gingivial borders. He distinctly said, as we all know, that fillings put in that position wash away and leave a cavity underneath. In these cases he advocated gutta percha to fill it up a third of the way, along the danger line, and covering with cement. That referred doubtless to those peculiar cases in which it seems to be impossible or inexpedient to insert gold fillings.

Dr. J. G. Reid:

I do not know that there is anything in the paper I could take issue with and at the same time be conscientious to myself and conscientious to the essayist. Dr. Johnson has been practicing dentistry twenty years, I guess, and he is just beginning to realize, like a great many of us who have been in practice a few years, that he pins his faith to the still reliable filling material, gold, and that I endorse in every respect. We have no filling material today, in my opinion, that will universally take the place of gold for the arrest of caries in the teeth. All other materials that have been mentioned are substitutes and of a very fickle and uncertain nature.

Dr. Case has very wisely and very thoughtfully called attention to the fact that every material depends upon the man behind the gun. In my opinion most failures come from the use of gold as a filling material through poor manipulative ability in observing the technique of properly introducing the gold filling, and one of the particular things that causes failure in the use of gold is the fact that the majority of men who attempt to put in a gold filling fail to obtain the proper amount of space to admit of properly inserting the filling. I think that is one of the strongest reasons why failures occur so frequently in making gold fillings, and is largely due to the fact that the operators work in a space where no one could put in a good gold filling. When that mistake is not made I do not believe there is any filling which will take the place of gold, universally.

I endorse very heartily the use of plastic gutta percha. I pinned my faith to that for a good many years. There is no filling material that will take the place of gutta percha except gold, and there are some places where you cannot put in gold and can put in a good gutta percha filling that will be more serviceable than anything else that could be placed in the cavity. Where there is no friction, no compression from mastication, where there is no mechanical wear on its there is no filling that is better than gutta percha, in my opinion, for the universal preservation of teeth.

Nothing need be said about the use of amalgam, it has its place. But it is only by a great many years of experience and careful observation of the ground in making selection of the materials used for filling teeth that a man can select the best thing at the right time. I have always believed that the great success Dr. Cushing had in his practice was because of that peculiar ability he had of selecting the materials just at the right time. It was a wise judgment in being able to tell just exactly at the moment what was required and then doing it in the best possibly way. That was the secret of his success, and that is the secret of our success today in the practice of dentistry. The young man who enters into practice today is the man who makes failures, very largely, and that is mostly due to his experience and his inability to determine what shall be done just at the time. When they think he is getting too old to be of service to the public that is just the time when his services are the most valuable and when he is at his best. It is a great mistake for the public to say that a man is getting too old for such and such a performance; he never gets too old, he gets better the older he gets, if he is a good dentist and a wise one.

Dr. E. R. Carpenter:

Personally I feel that Dr. Johnson has offered us a moral message from which we can draw many lessons, and I admire the breadth of his statements. I believe there is nothing in the line of operative work which will so educate our fingers to execute technique as the gold plugger. I do not believe, neither does Dr. Johnson, that all cases would be better for foil filling, but I do believe there are many cases where the inlay worker through his enthusiasm errs. I have done so. I like to get back to foil and the pluggers, and scarcely a day goes by that I do not refer to them, and there is always the satisfaction of having done right when I get through. My back may ache a little more and my eyes may be a little more tired, but I have done my patient a good service and I have justified my father's name.

I would indeed be an ingrate if I did not on this occasion call attention to the fact that my second preceptor, Dr. Pruyn, instilled into me and gave me more and better points in selecting filling materials than any one person I ever met with, and I have him to thank today for much good judgment in regard to them.

I was very glad to hear Dr. Case call attention to one old, long tried filling that seems to have been lost sight of by many operators, and good ones, too, and that was the application of tin at the gingival border, along the line of extensive caries below that border where amalgam is often used. Personally I have examined a great many fillings, while under the tutorship, in a way, of Dr. Pruyn, tin and gold fillings at the cervix that have been standing ten and twenty years, and are just as hard as a piece of glass. I have had occasion because of accidental fracture to remove two or three fillings, while in the employ of Dr. Pruyn, where he had a note in his records stating that the tooth tissue at that point was very soft and uncertain, and I found that several years afterward they had become as hard as a piece of flint. My professor of operative dentistry, Dr. Darby, has always been a great advocate of that method, and I use it today with pleasure. I suppose it is rank heresy, but it is the truth and I can defend it, in many cases I use today cement down to the gingival border for proximal fillings. Iuse them there for a purpose and that is not only to harden, which I believe it does, but to remove the extreme sensitiveness of the dentine. I have been guilty of leaving it over six months, which I think is wrong. But where I place those fillings in a position of that kind for that purpose I make a note of the operation and that the patient is to be notified in six months that the filling is to be removed.

I take issue with the essayist or any one else who advocates the leaving of cement in proximal spaces for over six months, for the reason that even though you have gutta percha at the cervix you will have a contact point of cement, and if that contact point is against a good tooth surface, in the filling you take the chance of a slight roughening of that surface, which will mean ultimately decay. So six months should be put down as the limit of a proximal filling of cement that comes in contact with another tooth surface.

I have gotten a good deal of pleasure since I have become less radical, more sane in the use of inlays, especially gold inlays, and I have had the chagrin the past year of being obliged to take out several large porcelain restorations in molars where there had been recurrent caries at the cervix. I believe that with our present intelligent use of gold inlays that can be avoided.

DR. W. V. B. AMES:

I was very glad I could come here this evening because I knew I would be edified by what Dr. Johnson would have to say. I had not the least idea that when it came around to me to discuss the subject I could consistently have a word to say. I can say, however, that my observations have led me to place a great deal of faith in amalgam used in the patching of gold fillings which have failed, either at the cervical margin or the usual proximal margin. There is a peculiar action between gold and amalgam that renders amalgam particularly useful as a patch alongside of gold, and I believe the same holds true of tin, and exactly for the same reason that there is a certain electro chemical action between the base metals of the amalgam or the tin and the gold filling. Now I hesitate to go contrary to what seems to be almost the universal opinion here and apparently in the dental profession, that a cement filling cannot be used as an entire proximal filling, if such a thing is ever advisable—I will not argue that—but that cement can be used as an entire proximal surface and be safe at the cervical margins I will claim. Away back in my early practice, before I knew much of the oxyphosphates, I used the one which happened to fall in my way, which was the Justi cement, in making proximal fillings for young persons, and large restorations possibly involving the proximal surface, and I have seen these stand for years, when the occlusal surface would waste and there would be a certain bevelling of all the filling toward the cervical margin, but the cervical margin would be in good condition without the entire thickness of enamel being exposed at that point. I cannot, therefore, reconcile myself to this caution of placing gutta percha at the cervical margin for safety in making a proximal cement filling. I have often given my experience and said that I could not understand why this idea should be so prevalent. From faulty preparation of the cavity or faulty manipulation of the cement a leak may be created. In attempting to trim or shape a certain kind of leathery cement before it is fit to be shaped a leak is made which in time causes a failure and the failure is attributed to the wasting of the cemnt. In years back cements were all practically of that nature. At the time I first used cement for filling teeth the Justi cement was the only one which would set in a certain definite way, enabling it to be trimmed at the same sitting, without the tendency to draw under the instrument in attempts to shape it. Or, if one should have rubber dam in place and unwisely draw the septum of rubber from between the teeth, with that old style leathery cement there must necessarily be a drawing of the cement from the margins —and ten to one it was a moist margin when the cement was put there, because that was about as much care as people took in making cement fillings—there would be no adhesion and it would be drawn away. The failures have been of the operation rather than of the material. To go back of that, even, I am inclined to believe this opinion that cement cannot be trusted in the cervical margin has been handed down from the old days when oxychlorid of zinc, the only cement we had in this country, had a fashion of giving way at the cervical margin. I am not arguing for proximal cement fillings, although I have seen them do excellent service, but as a general proposition I want to say that it may be a good thing, and I believe this caution of putting gutta percha at the cervical margin is a bugaboo. I will hope that exhaustive evidence on this matter may be presented by some unprejudiced person, which condition of course, excludes its being undertaken by me.

Dr. E. J. Perry:

It is indeed a pleasure to listen to a man in whom you believe read a paper. I take it the paper is broader fundamentally than the discussion indicates. I think among the things which have been said in this discussion perhaps Dr. Case came as near as any one hitting the nail on the head when he said that the chiefest factor was the man behind the gun. Dr. Johnson made a most excellent and telling point in his paper when he referred to the moral effect of a good gold filling, and Dr. Carpenter very aptly put it that the gold plugger is a most excellent educator of fingers. All work well done is a moral educator. Any work, the digging of a ditch or the building of a house, if undertaken and done conscientiously will give a man moral power. I take it that the operator in selecting material with which to fill a tooth, taking into account his own ability, is a broader man than the general discussion indicates. I think I am the one who made the remark to Dr. Johnson one day at the noon hour, that I was a stronger man than I was in the morning because of having overcome the temptation to use amalgam and had instead used gold. I have noted the moral effect upon my own self in the use of the best effort. I can see a tremendous amount of good to be accomplished with any of the filling materials at hand, I cannot dispense with any of them, I use them all. I love a man who is broadly eclectic in his practice, who is broadly eclectic morally and politically and socially. In other words, I do admire a Democrat. Not one who belongs to the Democratic party or one who smites himself across the breast and thanks himself that he is not as other men are, and calls himself a Republican. Not these kind of men, but a man who is broadly Democratic. I love him, and I love the man who is broadly eclectic. That is why I came here tonight instead of going home. I did not feel very well and did not think I would come, but I reflected that Dr. Johnson was to read a paper on Discrimination in the Selection of Filling Materials, and I knew it would be good, that it would be well thought out and nicely put. Let every man do the best he can; let every man put all effort into his work. This question has been thrashed over and there is very little profit in comparing one material with another. Something like a year ago I had one of Dr. Wassall's patients. She had 21 or 22 inlays of porcelain in her teeth. Every one of these inlays except one was good, the teeth were being perfectly preserved, and I said to her, "These inlays are preserving your teeth." I have seen inlays, scores and scores of them, that were doing most excellent service, and have said to myself, there is no reason why I should not avail myslf of this method of filling teeth where the indications seem to point to it. I have seen most excellent gold fillings, and I have seen recurring decay under gold fillings. I guess failures have been made with almost every kind of filling. There are so many things which might cause failure, intractable patients, conditions in the mouth, teeth decay more quickly in some mouths. There are a multitude of reasons why fillings fail. Indeed I say to my patients at times, the wonder is, not that fillings fail, but that they do not fail more. My mind often runs back to Dr. Black's experiments with the machine he made. You know he devised a machine by which he could measure the biting stress of the human jaw in pounds, and he found that the human jaw could bite up to 300 pounds. I have had patients come to me with absolutely sound bicispids split. So I say there are a number of reasons why fillings fail. The thing for a man to do is to do the thing he succeeds best with, always examining himself to see whether he is conscientious, to see whether he is doing the best he can do. Dr. Johnson can do things I cannot do, Dr. Wassall can do things neither of us can do and I can do things, possibly, simple things, neither of them can do, and yet it is a good thing for us to thrash over this old straw a few times.

Dr. J. E. Hinkins:

I do not know that there is anything left for me to say, the subject has been so thoroughly gone over. I think if I were to read a paper on the same subject I could take Dr. Johnson's paper and say amen to it, in my own practice.

I was surprised that he did not mention the combination of tin and gold in his paper, for that has been my strong hold in posterior proximal cavities ever since I have practiced. The first thing I do as a dentist when a patient enters my office is to study the temperament of the patient and see with what material I can give the best service. I have had patients for fifteen years where I never put anything in their teeth but cement, and if I should hold them fifteen years more would never expect to fill their teeth with anything else. I have them come in every three or four months and I examine their teeth. I have other patients in whose mouths I do not insert cement. I do not try to establish one filling as a standard. I use inlays with some success and with a good many failures, as we all have, but I will say frankly that if you look at the moral aspect, if you do the best you can for your patient, it makes no difference what material you use, it is a moral victory. When I have a patient come to my office who takes care of the mouth and the teeth I do not feel that I have done the patient justice or myself justice if I fill a tooth with anything but gold. When I fill that tooth with gold and do the best I can I feel that I have a monument which will last, the joint or space will not be discolored as with some cement you see in porcelain inlays, and the margins will not break away, but I have something that will stand. So I have never been very enthusiastic on the inlay proposition, although I have had to do a good deal of it, and expect to do a good deal of it. One feature I have observed which is objectionable to me in inlay work, especially porcelain, has been since the epoch of the silicate and similar cements. They seem largely to have the power of forming a black line between the inlay and the enamel. Another objection I see to these cements, and probably Dr. Ames has seen the same, they seem to lose their adhesiveness and cohesiveness to the teeth. It seems absolutely necessary to have to use a little phosphate of zinc next to the walls of the tooth first. So we have got to be very careful with them. The best filling I put in, the one that gives me the best satisfaction and is most satisfactory to my patients, in proximal fillings back of the bicuspid is to fill about one-third of the cavity with tin; I don't have any particular combination to use, if the tooth is soft in structure and rather close to the pulp, for the lower third I use tin largely. If the tooth is not quite so soft and the pulp not very sensitive I use a rope of tin and a rope of gold and stick them down in the cavity together and press them down, evening up one-third of the cavity, then finishing with gold. When I have a patient come in with fillings around the cervical margin I sometimes repair them with cement, sometimes with gutta percha, and sometimes with amalgam. But in all cases I take into consideration the temperament of the patient and the condition I have to work with. I believe it is useless, if the patient is slovenly with the mouth, does not keep the teeth clean, to break one's back in putting in a gold filling. I quit it years ago. Amalgam, cement, gutta percha, is as good as they will take care of, and what is the use of wearing yourself and the patient out with something they will not take care of. A man has to do the best he can for the patient and himself.

Dr. G. W. Cook:

When Dr. Johnson was reading his paper I was reminded of a little incident, a story I heard once of a surgeon who was lecturing for the last time to the medical students. He said, "Now, I have told you a great deal about how to do certain surgical operations, and you perhaps are all familiar with the technique necessary to amputate a leg, but I want to say one thing to you that may be of service to you: it is not a matter always of cutting a leg off, you can do that with a caseknife and a brick bat, all you need is the brick bat to sharpen the knife on, but the most important thing is to know when to cut a leg and when not to attempt it." I think Dr. Johnson's paper is meant to emphasize a principle, more than the particular materials to be used or what one or another can do. As Dr. Reid has said, the filling of a tooth is largely a matter of judgment as to what you should use, and it takes experience on top of theoretical education for the individual to be able to discriminate intelligently between what he should do or should not do in a particular case. It would be just as absurd, it seems to me, for one to say that he would fill all teeth with this or that material, as it would for a physician to say, I will cure all cases of appendicitis with a particular drug, or I will operate on that case with a particular pair of forceps and knife. It would be just as absurd to state that you can fill a tooth with one single material and follow that out in practice right through, as it is for the physician or surgeon to say that he will cure all cases with a particular remedy. I remember a statement made several years ago in a medical journal by Victor S. Vaughn of Ann Arbor, who said that the practice of medicine was not how much medicine you could give to the patient, but the skillful thing about medicine was to know what to do for the patient without giving much medicine; to treat them in such a way that certain hygienic conditions would be the point to be followed out regardless of what the remedy might be for the particular disease. And that is what we insert fillings for, it is for hygienic purposes. We are hygienists principally, and we differ from medical men in that we have to resort to mechanical means for performing these operations or protecting these particular organs from disease. We all of us see failures by the best men, and we see failures of our own a sufficient number of times, pretty nearly all the time, in fact, to justify us in wondering sometimes, as Dr. Perry has said, why it is we save as many teeth as we do. The materials at our disposal for filling teeth all have peculiar characteristics of their own, and if we know those characteristics and know how to place them, and know where we are going to place them, then we ought at least to have fairly good judgment in selecting material to fill a tooth.

I think the fundamental principle underlying this paper is of the very highest order. We hear so much said about inlay work at the present time; we have heard so much about amalgam and cements and gutta percha, all of which are useful, and it would be hard, I think, for the general practitioner at least to practice and be skillful unless he used them all more or less. To discard any one of them would be a great loss to the patient and to the operator.

The moral effect has been mentioned here, the moral effect of putting in a gold filling. Anything that would tend to lessen the skill of a man in handling his fingers would lessen his ability to be a good dentist, because much depends upon the manipulation of the material, and if he can put in a good gold filling, and he ought to do that four times a week for practice, if for no other reason, his judgment and his moral stamina would be better fortified for doing any other class of operations. It has been unfortunate in the past, I think, that so many remarks have gone out from skilled operators, especially in porcelain inlay, that there was nothing to preserve the tooth substance but inlays. I have seen some of the most inartistic work in inlays in the mouths of people where I have seen by the same operator splendid gold fillings that had done service for many years. While there are always indications for porcelain and gold inlays in operative dentistry, at the same time I think many men have gone astray on inlays. This leads probably to loss of good manipulative ability, to good judgment and the good moral effect on the individual when trying to do one thing all the time. It has been said that if you continually do one thing you become so skilled that you do it better, but I think that is a mistake many times in inlay workers, they do it so easily, nicely and satisfactorily that they finally get into a habit of thinking, "Why, all you have to do to get a good amalgam filling is to paste a little bit of veneering over some cement, and let it go at that." The fundamental principle underlying filling is the preservation of the tooth substance. The thing we should know is the nature of the tooth structure we are going to fill, regardless of whether it happens to be soft or hard; whether it happens to be an accessible cavity or one that is inaccessible. It must be done with the understanding that there is something besides the tooth to attend to in that mouth. The tooth itself, probably, is the least important, it is what surrounds it.

There is another question in my mind, and that is that the acids produced by bacteria affect cement very little, but the acids that come from the fluids of the body are a decided dissolvent of cement. They will act upon cement very much more quickly and easily than the ordinary fermentative products of bacterial life, or even the decomposition of dead material that is not acid in general character.

A MEMBER:

What do you mean by acids coming from the fluids of the body?

DR. COOK:

We have acids in the oral cavity that are not of bacterial fermentation, strange as it may seem. Those of us who have worked at this do not know exactly what these acids are, but there are acids we secure from organic and from septic processes, that are called organic acids, which resemble very much the acids we find sometimes in saliva, only much more strongly. I think the time is not far distant when we will come to realize that we have more than bacteria to contend with in decay of the teeth, in erosion, and in those cases in which we are thinking only of the fermentative processes of bacterial life. I know, by experiments made recently by Dr. Hinkins and myself, and by myself alone, and by Dr. Matthews at the Chicago University, all of which tend to disabuse my mind of the idea that decay of teeth is solely of bacterial origin pure and simple. We have constant physiological changing of the body. Every nervous impulse of the body manifests itself in some particular way in an organic output of the substance of the body. The excretions, the secretions of the body are changed by every impulse, and I question, when we stand and work hard, as many do, over the operating chair in a dental office, if we would make a thorough analysis every day we would not find our selves in a very much different condition as regards the fluids of the body at night than they are in the morning when we first go to the operating chair; and that is continued, quite commonly, for 315 days in the year. We will have to consider that as a great factor in the given case, and a factor in the material we select for filling teeth.

That is fundamental, and those points I think are the basic principles upon which the essayist has taken up the discussion of the subject tonight.

Dr. C. N. Johnson (closing the discussion):

I want to say for the benefit of Dr. Davis that I did not have any reference in my paper to the repair of fillings of any kind, so the impression which may have arisen that I advocated repairing gold fillings with cement was a mistaken one.

There is one point I would like to mention in regard to the use of gutta percha, as advocated by Dr. Davis, in proximal cavities in molars and bicuspids. What he has said is true in those cases as to gaining more space for operating, but I would urge a word of caution. We cannot safely put gutta percha in these cases in all instances and dismiss the patient, even for three months without seeing those fillings, because of the stress of mastication. The habits of mastication differ in different mouths. In one mouth where gutta percha will last perfectly and do what we wish, in another we will find the gutta percha forced down in the interproximal space sufficiently to do injury, if we have dismissed the patient for three months. So we require caution in placing gutta percha in these conditions.

A word in reference to what has been said regarding the combination of tin and gold for filling at the gingival border. I did not take up the combination of different filling materials. I did not intend to imply that I was mentioning all the materials. Since the question has been brought up as to the use of tin alone in the gingival third and building the filling up with gold, and the question of Dr. Carpenter as to what benefit there is in a combination of tin-and-gold, I will say that this combination will harden very much quicker and more effectively than will tin alone. I am in favor of the combination of tin-and-gold in the gingival third of molars and bicuspids. That has been in my hands the most satisfactory filling substance I have used, and while some of my friends object to the filling of gold-and-tin in these particular cases I must say that my observation and practice in the matter for many years has convinced me that it is a good method to use and one that is serviceable if the material is properly employed. I have a filling in my office today, in which the gingival third, nearly the half of a very extensive proximo occlusal filling in an upper bicuspid was made of tin-and-gold by Dr. Allport, and finished with gold. The walls of the tooth, buccal and lingual were frail, but the filling stood service for twenty-five years, when the tooth broke and the patient came to me. I took the filling out and it was almost as hard as flint. Probably when that filling was first inserted you could sink an excavator in the tin-and-gold, but after a few months it takes on a crystalline character which makes a firmer mass than any tin alone would make.

I think that we as a profession need some kind of stimulus in our work because it is exacting and unless we have some ideal to work to we will never accomplish the best there is in us.

As to the moral effect of a gold filling, during the discussion a case came to my mind that seems to illustrate my point of view. It happened in my office within the last week or two and emphasizes the idea I am contending for in a gold filling. A young lady has been my patient since she was a little tot and no one has done any work on her teeth except myself. She is 21 or 22, probably, and the third molars have erupted. She has had a great deal of work done on her teeth. A third molar had an occlusal cavity, and when I examined that cavity I thought of the difficulty of getting back in there with gold, and I said to her, "I guess, Isabelle, we will put an amalgam filling in that tooth." She said, "Dr. Johnson, what do you mean by an amalgam filling? I never heard of that kind of filling." The young lady could not have paid me a compliment which would have done me more good. Do you think I put an amalgam filling in that tooth? I said to myself, "My dear girl, you will never hear of an amalgam filling from me." I put in gold, and it did not make my back ache so badly after all. I use a great deal of amalgam, and think I do the best service to my patient. Still, when I get patients while they are young and bring them up, it is a pleasure to look in their mouths in after years and not see amalgam, and I think I am a better operator for trying to hold myself up to the standard of giving the patient my best effort. If there is anything we owe to our patients it is our best energies. Today it was my sad duty to help lay away a prominent medical man of this city, who gave his life to the profession and the people, doing more good, in his way, than any man I know of, medical or any other. He died at 59 years of age. It was said today in going to his funeral that he worked himself to death, and that he did wrong—that he sacrificed himself. I would rather die at 59, with the consciousness that I had given the best there was in me to humanity than to live to be a hundred and feel that I had in any sense failed in my duty.

WISCONSIN STATE DENTAL SOCIETY, 36TH ANNUAL SESSION, HELD AT MADISON, JULY 17-19, 1906.

DISCUSSION OF THE PRESIDENT'S MESSAGE.

Dr. H. L. Banzhaf, Milwaukee:

I desire to commend the splendid address of our worthy president. It has really been an inspiration to me. I am sorry I could not have had an opportunity to read it. There is so much that is teeming with good sense, and worthy of our most serious consideration, and I honestly believe that what Dr. Van Stratum has said will be prophetic of the state society in its growth and development. Our president is evidently in accord with the idea of district societies, and attention was called to the fact that there appears very often to be a dearth of workers in our state society. You know that there are in this state about 1,400 licensed practitioners of dentistry. I think you will concede that fully 50 per cent of this number are young men. I believe that the reason that this dearth apparently exists is entirely due to the fact that we have not developed our young men. I believe that the young men in Wisconsin are fully as brainy, as enterprising, and would be fully as aggressive as they are in other states, if given an opportunity. I believe that the only way to develop men who are forceful, men who are self-reliant, men who learn to stand upon their own feet, men who can do something for their brother dentists, and for the profession at large, is to set them to work. I believe that the young men, if they were given an opportunity to develop, would gladly embrace the opportunities that are offered, and would in time become the strength and fortress of this society; for I think you will agree with me that in the last analysis the future of this society rests with its young men.

Something was said of reciprocity. Now, that is a problem that is yet to be solved. It is an intricate one, and well worthy of the best thought of the best men in our profession. I believe the state of New Jersey caused to be passed a resolution at Ashville providing for reciprocity, but up to the present time there has not been one single interchange of license in the state of New Jersey.

That is something for you to think about. And as you reflect upon it you will realize the truth of the statement I made a moment ago that reciprocity is a problem yet to be solved. That it will be solved I have no doubt, and there will be a general interchange of licenses to practice dentistry, in time. I believe this, however, that in all states which recommend interchange of license, there is a clause in the law which provides for five years' practice in that state. And it is my opinion that if a man has practiced dentistry in any community for five years he is very likely to remain there and not try to enter other states. I believe that is the reason there has not been one single interchange of license in the state of New Jersey.

Something was said of legislation. Sometimes it is an easy matter to put laws upon the statute books. In this connection, however, I would urge that all laws should contemplate the protection of no man or set of men, but only contemplate the protection of the people of this commonwealth. That is what laws are for.

I was very much pleased with what our president said on the subject of our officers, and the manner in which he believes they should be elected. I also felt gratified, and a wave of inspiration came over me—to which I will not give heed at this time—when he referred to our institution of education in the state of Wisconsin, and the good that has been accomplished by the dental colleges in the country.

Dr. W. N. Murray, Minneapolis, Minn.:

I believe I am already an honorary member of this Society, and I believe it gives me the privilege of speaking if I am able to. I wish to say something in regard to this feature of increasing your membership in your Society.

At the last meeting of our Minnesota State Dental Association the number of new members that added their names to our roll gave us a majority of the dentists of the state of Minnesota. Consequently, we feel, in one sense, as if we could dictate the political policy of dentistry in our state. That is something that we think is of inestimable value. I believe it is the duty of every practitioner of dentistry, of the older practitioners particularly, to interest young men in society work, and to get them into your society. I think it is your duty to do it.

Speaking of dental laws, I do not know just how your law is framed, but ours reads that in the appointment upon our State Board, our Governor may appoint from members selected by our State Association. We have had it thrown at us by some of our former Governors that we did not represent the dentists of the state, and they would appoint whoever they pleased. Now we feel that we are in a position to go to our executive and say: "We do represent the dentists of the State of Minnesota." This is something that I think is of inestimable value to the profession, to have that feeling. That is why I think you should interest your young men and get them interested in the work of the society and feel that you have that political power.

Dr. J. J. Wright, Milwaukee:

When they begin to talk about laws and state boards it interests me. Now, in regard to reciprocity, I think there is but one basis upon which you can practice reciprocity, and that is equal preliminary education. We find in that matter that our various states differ so much that it is practically impossible for us to reciprocate in a great many states of our Union; and some of those are our very near neighbors. I believe that the State of New York has a reciprocity clause at the present time, and I believe that they reciprocate with the State of Pennsylvania; but I am not aware that they reciprocate with any other state. They are willing to reciprocate with the State of Wisconsin just as soon as you will raise your standard to what their standard is for preliminary educational requirement; and that is, as I understand it, graduation from a High School. Take some of the southern states and the requirement is very low. We find in some of our northern states that it is medium and high. Now, how are you going to bring these states together in this matter? Our President has suggested in his paper that we change our law to conform in reciprocacy with any other state, and then urge upon the State Board to bring this matter to the attention of other boards, so that it will be uniform. Gentlemen, that is practically impossible. It cannot be done. The different state boards throughout the country are at variance on this subject, just as much as the different members of the profession, and even more so. You take the representatives of the different boards of the different states, and those that have a high standard are very apt to say, "Well, we are not willing to let down the bars to states which do not require as high a standard as we do." So there you have it. As has been suggested, it is a problem. It is one of the hardest problems that the dental profession has ever encountered, although I think there is a proper solution of it, and it must come.

It is a very fine state of affairs to have the dental profession of a state in the condition described by the gentleman from Minnesota. It is a good thing to have a majority of the dentists of a state belong to the state society, and have them ethical, harmonious and working together for the good of dentistry and the common profession. It has been stated that we have something like 1,400 dentists in this state. A majority would, perhaps, be 700. That is not quite accurate. In the annual report we have something like 1,400 names reported, but there are only 1,100 men practicing in the State of Wisconsin. There are about 250 who hold licenses, that practice in other states.

I would like to touch for a moment on the subject of a change in the state law. I would say that the recent decision of the Supreme court does not attack that law in the least. There is not the first clause of that law that is found unconstitutional. But the thing that was found wrong was not in the law itself, but it was with the rules of the board. The rules of the board were a modification and copy of the rules of the National Association of Dental Faculties, I believe.

Dr. H. L. Banzhaf:

Faculties and Examiners.

Dr. J. J. Wright:

These men had these rules. The Supreme court, back in the nineties decided we had a right to formulate the rules for the government of colleges; so when Dr. Banzhaf was on the board, and Dr. Chittenden and Dr. Oliver and Dr. Wentworth—and I came in myself at the very last moment when they were passing that resolution—they codified the rules of those two organizations as to the government of colleges. After they were codified, it was fair to suppose that the colleges would live up to them; but the colleges have seen fit to do other things than are implied in those rules; and the Supreme court says that some of those rules are not correct. Of course, it is incumbent on the State Board to change their rules, to re-codify them. I just wanted to say this in this way, because you have heard a great deal of the State Board and their litigation and other matters. The State Board does not represent anything but the dentists themselves.

They are organized and perpetuated by law, for the purpose of enforcing the laws and rules which the dentists themselves want. They are the creation of the dentists themselves, and they never should be anything else. The farther they get away from the dentists the farther out of the road they are.

Dr. C. Bentley, Chicago, Ill.:

I think it were proper that the discussion on this subject should be confined largely to members of this Society who are familiar with it. I come here as a listener principally, but the President in his paper, and the discussion, has taken such a form that, whether I reside within the boundaries of your state or not, there have been some things referred to, and some things said, that will interest any dentist, wherever he may be, if he is an interested man in his profession, within this country.

Now, the problems that have been stated by the President, and also discussed, have been largely epitomized in the term "intricate problem," so far as the problem of reciprocity is concerned. Dr. Wright has put the matter squarely before you when he says that reciprocity is almost an impossibility when there are different grades and different laws and requirements to the entrance of an institution. It is not fair to presume that an institution that has a high standard, in Massachusetts, or in Illinois, or in Wisconsin, should let down its barriers to a state, for instance, that may not have any such requirements. I have been informed in Chicago, in matters of this kind, that there are some states in the Southland where there is not a high school in the state. One of our requirements in Illinois is that they shall have a least two years' high school education before they are eligible for entrance into a school. How can you reasonably expect any reciprocity to exist between the graduates of a school in Illinois and the graduates of a school in the South to which I have referred? It is hardly possible. And I cannot for the life of me see a way out of this intricate problem; and yet it must come, and it must come along the lines of either the lowering of the standard, on the one hand, or the raising of it on the other. However this may be, there must be a unification in the matter of entrance requirements, in order that complete reciprocity will obtain. This is a question that largely concerns the State Boards, and it is your problem, gentlemen, who are on the State Board, and it is our duty to help you. There is an element of injustice in this whole matter, that a qualified man should be kept from practicing his profession in a neighboring state, because he cannot answer some questions, but is practically efficient.

With reference to your society, that is not so much of a problem; but it is a condition that I think you can more readily apply some effective rules to. This is an axiom in organization work: "A representative body in an organization cannot maintain its interest, or cannot maintain its membership, unless there are subsidiary bodies that contribute to it." Now this organization, as I take it from the complaints that were made in the Chairman's address, will not be a truly representative body until you have subsidiary organizations radiating from this body to the various centers of this state. This should be the focal point from which should radiate these lines of interest; and this body should be only representative in that it has representatives from these local organizations. By this continued agitation and persistent and consecutive work it is quite possible to make this body what the most sanguine and ambitious among you desire.

Now, I am not speaking theoretically in reference to this. We have done this in Illinois. Several years ago we had a membership of something like 250. Through the efforts of the organization committee, and through the combined co-operation and co-ordination of all of the interested members, we put our shoulders to the wheel, and year before last we had enrolled a membership of 1,200. Last May our membership had increased to over 1,300. That is the largest State Dental Society in the world, and I may be pardoned a seeming egotism when I say I believe it is the best. It is doing more effective work, more truly scientific work, it is giving aid to the humblest members of the organization; it is stimulating activity in the remotest parts of the state. The men in the southern part of the state, that had almost died of lethargy, are today rejuvenated, and alive to the interests of their mother organization, and are sending representatives there, and are holding bi-monthly meetings. This has all been done by a methodical and systematic way of organizing the state, and it has shown its proper results by giving to us this large membership, this effective work.

Another reason why some similar action of this kind should be endorsed by this society is, as has been referred to, that you can make yourselves effectively felt in a political way. Complaint has been made of the lack of legislation, or the character of legislation, which is now upon the statute books. You cannot go to a representative in your legislature with a membership of something like two or three hundred and claim that you represent the dentists. But if you go to them with a majority in your membership, as we have in the State of Illinois, and as they have in the State of Minnesota, you can represent to them that you have a majority of the state, and that you have a reason to demand that your requests be acknowledged or acquiesced in. We had a similar experience to this in the State of Illinois recently. Two years ago we attempted to enact a law; and the law, whether it was good or bad, makes no difference at this time; but we were told that we did not have over 20 per cent of the members of the profession of the state in our organization. It was an argument that we could not refute, and it practically took the wind out of the sails of our claims and our reasons; but when we went to them with 1,200 members, and sent our delegation to them saying that we represented a majority of the State, and that we represented 60 per cent of the State, then they commenced to sit up and take notice. It was only when we represented that we had the numerical strength, and solidity of purpose back of us, that they became interested. Many of you are familiar with the legislation that we have recently passed. I am proud to say that we have one of the best laws in the State of Illinois that adorns the statute books of any State, so far as dentists are concerned. And it has only been done by this united effort. You can do the same thing.

Now, I have not anything further to say other than to felicitate you upon what I conceive to be a very auspicious opening for a society that has such a small membership. I think there is every reason to believe that there is inspiration working in every corner of this room; because I see young men in it. Not that I would discount the efforts of the old men, because they are for counsel; but for action, for the man that dares to do a thing, even if he fail, you must look to the younger men; and it is the younger men in this State that are going to make this society. It is for you older men to give them inspiration, and to lead them with your counsel, as the result of your accumulated experience.

I am more than glad to meet you. It is my second opportunity to meet you in this place within the last seven years. Every time I come I am inspired, and always carry something back with me.

Dr. R. W. Fallis, Prairie du Chien:

As we are all interested in raising the standard of our profession, I think it would be proper for some one to make a motion to the effect that we would like to have the standard of the profession kept at the highest stage. I thought this matter of reciprocity over before coming here. As Doctor Wright has said, it is almost an impossibility to have it at present; but I think we could raise our standard in such a way that every State would have to have the same examination for students or people who wish to practice. Each State should have its State board, and they should appoint a national board, and this national board should formulate the examination papers, and send them to each State. Have the examination for each State held on the same day of the year, or the same period; have them draft the questions, and have them examine the papers; and have the requirement that every student should enter that examination on an equal basis. If a student can not present a diploma from a reputable institution, I think in the course of a year or two that college would go out of business. If our national State board should draft those examinations and send them to each State board and have them examine the papers, it would give us an equal footing throughout the United States. I do not know whether it could be worked out, but I would like to see the profession raised as high as possible. I think most of the colleges now require high-school graduation; and as it goes higher each year, I do not see why one college should not demand as high as another. If a college admits on two years, it shows that they are working for men who are not equal to the colleges which require four years' attendance. I think those colleges should be wiped out of existence, and then we would have dentistry placed on a higher plane.

Dr. B. G. Maercklein, Milwaukee:

I would like to compliment the president upon the sentiments expressed in the paper and the various points referred to. I think they are of the greatest importance. I am glad, also, to see that so much interest is taken in this one subject; however, there are other subjects that have been referred to, that are perhaps as important as this subject of legislation and reciprocity. I think that the president's address ought to be referred to a committee of three, to carefully look into its merits and report to this society at some future meeting, before we close. There are quite a number of points in there that are of the utmost value, and it is almost impossible for any one to do justice to them on the spur of the moment.

I desire to record my protest against some of the remarks that have been made here against the possibility of reciprocity. I will not concede, for one, that it is impossible, but I say, and unhesitatingly say it, that it is the simplest thing in the world, if we look the thing fairly in the face. Drop out preliminary and subsequent educational standards, and throw them to the dogs, and accept a brother by the hand, whether he comes from Illinois, Louisiana or New Mexico, if he is entitled to practice dentistry in that State. The people of Wisconsin are no better than the people of Illinois, Louisiana or New Mexico. If a man is an impostor in New Mexico, he can only be an imposter in Wisconsin. We are welcoming people of one State, and leaving out those of another. If the dentists will simply drop their hair-splitting standards, and accept the local standard where the man is entitled to practice, the problem is solved. As the president says, the subject of State rights was settled in 1865, and let it be settled. In illustration of this fact I can cite one example with which the great bulk of you ought to be familiar. A man admitted to the bar, when he is admitted to graduation of this or any other university, or tutored in an office, or admitted by a competitive examination, or special examination for the bar—when he is admitted to practice law before the court, he is admitted in other courts of that class in the United States. Does the judge ever think of asking a lawyer: "How did you spend your school-boy days?" "Where did you get your education?" That is the work of the committee. That is the work of the State board, wherever they may be located; and if a man is not up to the highest standard of the profession that is his own shortcoming. He is allowed a legal right to practice his avocation in that court, whether it be in a justice court or the supreme court of the United States. They make no difference. We can do the same thing, and until we rise to that eminence so as to receive a brother from any State, who is legally practicing, into our State, and give him that same right in our State, we are simply losing time over hair-splitting standards that do not amount to a hill of beans.

Dr. J. S. Danforth, Sheboygan:

I had no intention of discussing this subject, but I would not like the members to carry away an incorrect impression, from what Doctor

Maercklein has said. I would like to see reciprocity as much as anybody, and possibly it is not so hard to solve it, but I would not want to throw standards to the wind, by any means. We must keep up a certain standard. Dentistry is not going backward. It is going to forge ahead.

In the discussion of this question of increasing the membership of this society, I believe there is a paper on "Reorganizing State Societies," and I think at that time there will be an opportunity for discussing our State society, and how to build it up.

DR. T. A. HARDGROVE, Fond du Lac. Wis.:

A little farther along I notice there is a paper to be read on reciprocity. It is robbing that paper of its legitimate discussion, by discussing it at this time; but I can not refrain from saying something about reciprocity, nevertheless. If our schools would require as an entrance qualification that students possess a high-school education, and then each State recognize the different graduates, we would have the problem solved, except for one reason, that there may be some States that do not require that high-school graduation, and they will have to stay in the background until they can do that. There is still a drawback, and that is that it gives a poor boy a poor chance to become a dentist; and we must admit that we get a lot of our good material from that class of boys. But the poor boy problem will have to be solved in the course of evolution, the same as it always has been. He will have to get along as best he can, and I think he will.

PRESIDENT VAN STRATUM:

Gentlemen, I am glad that you have taken so much interest in this paper. You seem to have my views quite generally, and as it is getting late, I will thank you all for the interest you have taken, and we will proceed with the other business.

THE FORTY-THIRD ANNUAL MEETING OF THE ILLINOIS STATE DENTAL SOCIETY, AT QUINCY, MAY 14-17, 1907.

DISCUSSION OF PRESIDENT'S ADDRESS.

S. FINLEY DUNCAN:

Mr. Chairman and Fellow Members—I am sure we have all listened with great interest to the very able address of our president.

The time has come in our history when we are dependent upon the local societies for our very existence as a state body; and the president has well said that only as they prosper can the state society hope to fulfill its highest mission. While our new plan of organization is still something of an experiment, there can be no doubt of its success if every man will do his duty in the maintenance of the local society. Personal effort is the keynote to the situation. When every dentist in a local organization makes it his own business to get every other dentist who is eligible, to join the society, the time will soon come when we will have less use for the term "quack." For as the president says many even of this class may be redeemed by tact and careful handling. In speaking of the fifth group of men who keep out of society work, he calls them "knockers" and says they go around with chips on their shoulders hunting for trouble. Gentlemen, if there is any man under God's blue sky who never suffers disappointment it is the man who is constantly looking for trouble. He always find it. While I agree with the president that most of these kickers are undesirable as members of a society because of their desire to run things, I am persuaded that one of the best ways to deal with them is to give them a chance. Put them in positions where they will have an opportunity to either make good or demonstrate to their satisfaction that they are unable to do so. Many of these fellows will make fairly good society members if they can only be brought to see themselves as others see them. It seems to me a good plan for the state society to appoint a committee to outline a course of study for local societies. If all the members of a local organization were to devote their attention to the study of a given subject for, say one month—or even a longer time, and then at their meeting discuss the different phases of that subject, the discussion to be led by one of their own number previously appointed for the purpose, they would obtain much more exact knowledge than under the method of having a paper read and then discussing it without previous preparation as is usually done. The subject might be outlined by the state committee so that different parts of it could be assigned to certain individuals to develop. I most heartily endorse what the president says in regard to the state society being prepared to send special lectures, essayists and clinicians to aid local programs and stir up interest. Yet I would not forget the importance of local men learning to do these things by doing them. In the Will-Grundy County Society, to which I belong, we recently tried the plan of having a half-day clinic given by local men. The experiment was such a pronounced success that it was decided to hold another in the near future. We each do some things differently from the way others do them, and every one can appropriate some points and give others that must aid in every-day practice. I like what our president says in regard to social meetings. I never enjoy myself better than when seated at the dinner table with the men who have the same kind of daily battles to fight as myself, the informal discussion of which makes us feel more nearly akin. Those of us who attend the state meetings regularly recognize the fact that much of the good we get out of the meetings comes from our social intercourse at the dinner table and in the hotel lobbies between sessions. It would be a hardship to me if I could not at least once a year meet the splendid men who compose this society and from whom I have gotten so much that has helped over the rough places in the routine of daily practice.

Dr. M. R. Harned:

The Illinois State Dental Society is one of the grandest in the world, and we are today the consensus of all that has passed before. Back of you and in and through you gaze upon me the faces of men who have gone before and who contributed to the excellence of the proceedings of this society. It may be compared to a ledger account in which every one of us has contributed something; each constitutes a figure, and when we have come to the time for casting up accounts to get the sum-total of what the society stands for, and in this is reckoned our past experience, we can readily see why this society has done grand work. The question for us to determine is, What position do we occupy in this ledger account? Are we simply ciphers, who by reason of our place, have moved some other figure up from the decimal or are we higher, potent figures?

With regard to the men who have not assembled with us, the president has referred to them and classified them in a most excellent way, yet I believe that those men are what they are because of circumstances over which probably they have no control. I tell you, gentlemen, we cannot reckon too seriously with the psychology of the thing; I mean mind influences which have affected those individuals before they entered dentistry, and afterward. I believe that every man wants to be right and to do right, and that every man is striving to get right. The fault is usually in his ideal. Furthermore, many have been raised in luxury; and entered the dental profession thinking this is the way to lead an easy and luxurious life. They have been disappointed and are compelled, by reason of not being able to support themselves in the style to which they have been accustomed, to resort to commercial means to sustain the style which they demand. We look upon them as pirates. A duty devolves not only upon them, but upon the rest of us—a duty of personal influence. I feel that many of us could help very materially by our advice to the student who applies to us and talks with us about entering the dental profession. Will he make a professional man? This should be considered as applied to an applicant as a student in a dental college. What can we do in the way of helping to get these individuals into societies after they have graduated? An important thing is to get men interested early, before, through some other influence, they are beyond the pale of what we term ethical. This we can do by calling on them, giving them the glad hand, and making them feel at home with the profession.

Reference has been made to the advantages of social association. I believe that is excellent, but too much of it may be detrimental, because if the social side is held too strongly in view, there may be an inclination to discriminate against the man because he is not socially a good fellow. He may be excellent in the profession, but some may say he is a clown socially, or that he is not a man we would want to have sit at our table, so we leave him out. That is certainly the wrong attitude for professional men to assume.

To me dental societies are of tremendous value. The opportunity of good fellowship is excellent, but best of all, is the means of expression, a very important thing in life to every individual. I feel that I have gotten more good from writing a paper on a subject I knew little or nothing about than I have from listening to some one else who has prepared a paper and has read it. My advice to an individual, who wants to know about any practical theme in dentistry, is to give a clinic on it, and if he has nerve to do it, he will receive more pointers than any one else on that particular thing.

The dental society is really a union, but it is a union without strikes and which does not force lockouts, and it has an unselfish purpose. Selfishness is the nucleus, but the radiation from that nucleus is unselfish, because while we meet for our own improvement, yet the result is most beneficent upon the community to whom we administer. One of the strong desires of every one of us should be to implant in the mind of the young men high ideals. We live in an atmosphere that is permeated with good; it is what we may term the urge, the uplift of nature. Most of us in our growth put forth a lot of leaves before we begin to blossom, and it is sometimes long after the blossom before the fruit is ripe. But it is bound to come.

I feel that while I do not attain that which I desire, yet I am growing. I ran across a little extract the other day, written by a friend of mine, which expresses this thought beautifully and, with your permission I will read it.

It is by Charles Sandburg and is entitled, "Don't Worry."

"I want to do the right thing, but often I don't know just what the right thing is. I am making mistakes and expect to make more. Every day I know I have bungled and blundered and come short of what I would like to have done. Yet as the years pass on and I see the very world itself, with its oceans and mountains and plains as something unfinished, a peculiar little satisfaction hunts out the corners of my heart. Sunsets and evening shadows find me regretful of tasks undone, but sleep and the dawn and the air of the morning touch me with freshening hopes. Strange things blow in through my window on the wings of the night-wind and I don't worry about my destiny."

Dr. C. C. Meade:

I want to congratulate this society on having had the pleasure of listening to the able address of our worthy president.

Dr. Mawhinney has referred to the duty of local societies to the public. I think this question can best be looked at from the standpoint of education. The state society should educate the local societies, then the local societies can educate the laity or the public.

University education was first an education of the priesthood. I think the first university was solely for the education of priests. To-day we do not stop at the education of priests. In our universities it is difficult for a student to know what he should take in the way of courses. He can not take everything as he would have done in years past; he has to take a special course.

When the University of Illinois was founded our legislators looked upon it with scorn and would not lead a helping hand with appropriations to increase its facilities. We all know the extent of it today, and its influence as an educator.

With respect to what we are trying and hoping to do, it has seemed to me hard to predict the destiny of our noble profession. We know what surgery is doing in the way of skin-grafting and bone grafting. The dental profession, of course, is not included in any of that work. We do not graft at all. (Laughter). But I predict this, that within a few years it will be possible that the dental surgeon will take the tooth germ from the jaw of a pig and graft it into the jaw of a toothless patient.

I look upon the dental society as a school for the men who have graduated and are ready to serve the public. To strictly practice equity and justice, a man must be educated in the true sense of the word. The dental society tends to enlarge a man's life, and the older he grows the larger his life may become.

We speak in our meetings often on the question of competition. It seems to me that is a misnomer. I don't believe we are competitors. We should be working in co-operation with one another.

In order to get at a man's views in regard to society work I think we have to look at the matter as Darwin did. We have to look at his habits, constitution, and inclinations, and then we can get some idea as to how to apply our forces to bring dentists who are not members of our societies into the fold.

GENERAL DISCUSSION.

Dr. C. E. Bentley:

I have been edified by the splendid utterances of our president, and I am sure that the inspiration and enthusiasm inspired by them will be long and pleasantly remembered.

The highest function of all learned professions is service. If we accept that we can talk intelligently upon our profession. The president has given that as a central thought and as corollary to that the ideas of association, of tolerance, of a study club, and last of all and the most important, the idea of character, individual character, which is reflected in our organized character. There is no greater work for any man than that of service in giving impetus to higher ideals; service in contributing to the common weal, that humanity may be better.

There may be some men who think that their particular calling is for the material welfare, and that is not to be ignored, but the highest ideal should be that of service to mankind.

For instance, those of us who were interested in getting this law through the legislature, could not appeal to any of the law-makers until we had reiterated the fact that we were organized and were working for legislation for the benefit of the people and not for the good of any group of individuals. And it was that, together with other forces, that gave us the splendid law under which we are now working. Service is the principal thing, particularly in the professions. Along with is may come compensation, but no man goes into a profession to get rich.

The way to promote this high ideal and make it effective is by associated work. The most civilizing influence in the world is the influence of contact. If you can touch your fellowman, if you can look him in the eye and pour out your inner self to him, you will get closer together and touch shoulders, and can readily understand the potency of this influence of contact from association. A football team that will work without orders, each individual for himself, will do very ineffective work, but a team that is working under a captain, doing what is call team work, will do very effective work. This team-work—which means the concrete work of our affiliated societies—will conduce to the ideal of service, which we should always hold up. If a set of men will undertake to study a given number of subjects during the year in these smaller societies, possibly supervised by some of the members of the state organization, at the end of the year an inventory taken of what has been accomplished would show great progress. This study-club idea is not new. There are many such organizations in the affiliated societies in this country, and the consensus of opinion is that they are effective in producing results.

Lastly, the president referred to character. We might ask, theoretically, how can character be developed? I know of no better answer than this: "We rise by the things we have mastered and placed under our feet, by the passions slain and the pride deposed, for in the building of that eternal structure called character, the most potent things are the power of the will and the power of self-control."

Dr. C. N. Johnson:

This address of President Mawhinney today has given a tone to this meeting that ought to last throughout our entire gathering in Quincy. The keynote of the whole address was getting into the fold the men who are on the outside and who ought to be in. There is nothing so important for this purpose as personal contact. We, as an association, must also learn that the other man has his point of view. What we want to do, first of all, is to see these men personally, and get from them their side of the question. It is often a question of environment, of unfortunate circumstances, and I have the conviction, Mr. President, that there is no man practicing dentistry in this or any other state but what has something good fundamentally in him, if we only look for it, and our duty, as an association of men, is to find out the good there is in these men on the outside. I have known some brilliant men in the profession who, on account of some unfortunate bend or turn in the first days of practice, got outside and did things that were unprofessional. They have stood outside on that account, simply because they were not perfectly understood when they entered the profession. We should put our arms around those men and talk to them as brothers, and not hold ourselves aloof from them. They have good in them, and it is our function to find a tender place in our hearts for them, reason with them, give them the right hand of fellowship, and if we do this we will have most of them in the society.

Dr. C. R. E. Koch:

I confess I was never more deeply impressed than I was during the delivery of that address.

I am not the oldest man in this society. In looking around I see two seniors, Drs. Crouse and Noyes, and while listening to the address and looking over this audience to see all the faces, I saw at least as many more. I saw the men who builded and I was wondering how in the world men so little versed in education, especially in dental education, could have been so farseeing and built so everlastingly strong that the same spirit, the same creed, the same motives with which they started out forty-three years ago, are pervading and governing this new body of men.

Another thing that struck me as peculiar is that during all these years the spirit of hatred, of malice, and uncharitableness never came in. The spirit, which was so strongly portrayed by our president today, pervaded this organization from the beginning, although it was not so fully recognized perhaps and spoken of; and I want to say one word for those whose faces we see only in memory—Cushing, Dean, Patrick, Judd, Kitchen, Swain, Swasey, and hundreds of others. They were just as honest with regard to the idea of service which has been so splendidly dilated upon by our previous speakers, as we are today. That same spirit pervaded them, and I hope, and I know, as I see their faces and see them smiling on the work that is going on, it is an inspiration for the future, and I don't want you to believe that the younger men have developed all this work. I believe that the heredity you have brought with you, and you have found here, has a great deal to do with what you are doing today, and which I hope you will continue to do, as long as your mortal lives continue.

Dr. J. G. Reid:

The president referred to what the society might do in helping to uphold the dental law. My experience for the past few years may possibly enable me to throw out some hints that will be helpful.

We have the law-breaker, and we will have him as long as we are a people. Some of them are stubborn and defy all of the laws that govern and regulate society. The president has said it is your duty to refer the law-breakers to the proper authorities. That is true, and there is a way to do that, but the majority of the profession are not so much interested after all in a fellow that is practicing dentistry illegally. They pass by the door of the illegal practitioner from day to day and give his case no attention. They say, "I am not going to bother that man; he does not bother me." Why have we these perpetual law-breakers? Because you do not make it your business to attend to them and refer their cases to the proper authorities, which you should do, so that they may receive the proper attention.

Another thing: A man says, "I don't want to bother him because I don't want to have my name connected with it."

Now, any one who will call the attention of the members of the board to such a person need not be known. We do not publish names. If you will only individually help to do these things we can get rid of a great many of these law-breakers.

It is quite common for some person to address the Board by saying that a man of the name of Jones, for instance, is practicing dentistry in his locality without having been registered; he has no diploma, and no license. Now there are many men named Jones and the Board cannot give you any assistance unless you give definitely the name of the individual and his initials and location when you make complaints to the Board. But you must bear in mind that the legal end of this business may be several hundred miles away from the place where action is to be taken. Many persons get sore at the Board if these cases are not attended to at once. The case of an illegal practitioner cannot be fought in twenty-four hours, and sometimes it can not be done in three months. Be charitable and the Board will discharge its duties.

Dr. C. P. Pruyn:

The president has given us advice. He has had experience himself upon which that advice was founded. We were associated together for several years, and I was very anxious that he should ally himself with our dental societies in Chicago. He hesitated somewhat, and financially did not want to spend any more money than seemed necessary. For a time he refrained from joining, but an experience arose that taught him the benefit of oragnization. A patient came to him for an examination, which he made and gave an appointment. This person went home, consulted a friend and said she had gone to Dr. Mawhinney for an examination, who had made an appointment with her. This other person inquired, "Who is Dr. Mawhinney?" She said, "I do not know but I will ask Dr. So-and-So, who knows most of the dentists, and if he says he is all right, I will go to him." The gentleman consulted did not know Dr. Mawhinney, and as a result that appointment was canceled and a valuable patient was lost. I had a talk with him at that time and said, "You lost that case because you have not associated yourself with the dentists of Chicago. They don't know you." I said to him, "Put yourself on record; stand shoulder to shoulder with your fellows." He took the suggestion. We have seen evidence of that today in how this man has grown during those years.

I have been a member of this society thirty-one years and this organization represents to me something that is dearer to my heart than anything. Here we have fellowship that is very close, and no organization on earth (and I am a member of different societies) stands as close to my heart as the Illinois State Dental Society.

Dr. Mawhinney (closing the discussion):

I have nothing in particular to say in closing, except to thank all those who took part in the discussion. I want to publicly acknowledge to you the great obligations I am under to my good friend, Dr. Pruyn. During the time I was associated with him what I needed he was, and what somebody else needs, you are. Help the other fellow. I thank you for listening so attentively to the paper and discussion and for the honor of presiding over you.

RESOLUTION PASSED BY THE NORTH DAKOTA DENTAL ASSOCIATION.

Whereas, The hand of Providence has removed from our midst our honored member and active co-worker, Dr. George R. Leonard of Mandan, and

Whereas, In his decease we have suffered the loss of a member who had an active interest in this society, and who had the welfare of the entire profession at heart, therefore be it

Resolved, That we, the members of the North Dakota Dental Association in session in Fargo this 13th day of May, 1907, express to the members of his bereaved family our sympathy and sorrow in their affliction and assure them of our admiration for his high personal and professional qualities, and

Resolved, That these resolutions be spread upon the records of this association, a copy sent to the family of our departed member, and copies sent to the dental journals for publication.

J. L. Graves,
A. T. Hardaway,
R. J. Washburn,
Committee.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States, its possessions and Cuba and Mexico. Canada, $1.40. All other countries $1.75 a year.

EDITORIAL

THE ACTIVITY IN DENTAL SOCIETIES.

We do not believe that there ever was so much activity in dental societies as now, and we know of no profession of equal numbers where the association spirit was so prominent as in the dental profession. It is often the lament of our leading men that a larger per cent of dentists are not members of dental societies, and this lament is natural enough when the great benefit of associated effort is considered. As a matter of fact every dentist in practice should in justice to the people he serves avail himself of the benefits of frequent consultation with his fellow practitioners, and this can be obtained only by attendance on society meetings; but as an equal matter of fact it is impossible to expect that all men who go into practice shall avail themselves of this privilege. Human nature is human nature the world over and there is no exception in the professions, so that we find men in dentistry who seem temperamentally out of harmony with the true professional spirit. And yet this class of men seem to be growing fewer in number, or rather it may be said that they never were so numerous as was supposed, and that now we are understanding each other better and growing closer together. In any event our societies were never doing so much work as now, and there were never so many of them.

This is strikingly apparent in looking over the programs of the various state and local societies. They are apparently vieing with each other to see which can do the best work, and so many new local societies or study clubs are being organized that it is difficult even for one who is constantly associated with society effort to keep trace of them.

There never was so much activity of thought among the rank and file of the profession, or such an evident desire to evolve the best there is in new ideas and methods. All of which must result in better service to the people which after all is the desideratum of our associative efforts. And this will logically lead to a much extended service. It goes without saying that the better the service the larger the number of people who will seek this service. When we can demonstrate most conclusively the value of dental operations the public will not be slow to avail themselves of the privilege of having dental operations performed. And so the work of our societies is very far reaching in its results. This is all the greater incentive to society members to do their utmost to develop these organizations to their highest possible proficiency.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

The New York Institute of Stomatology held its regular meeting May 7.

Dr. A. H. Merritt said a few words concerning patents, based upon a recent opinion by one of the judges in a case outside of dental matters, relating to the shelving for an indefinite period of a patent. The patent being an improvement was purchased and shelved while the purchasing company continued marketing their own production after the lapse of several years. Some other company placed on the market that which the courts held to be an infringement and they were enjoined. This judge referred to dissented on the ground that the public had some equity in such a patent and the lapse of time should be held to be against those who had shelved it.

Dr. Herbert L. Wheeler spoke on "One Influence of Trade Journalism," referring to an article in which a certain brand of plaster of paris was spoken of, and incidentally commenting upon English laws in regard to shelved patents as being in advance of the American law.

The guest of the evening, Dr. George Van Ingen Brown of Milwaukee, Wis., was then introduced to speak upon "The Pathological Significance of Elementary Surgical Principles in Oral Treatment," having as a collateral question the following to answer: "Is the Average Well Taken Radiograph a Safe Guide in Diagnosis?" He spoke at some length of simplicity of procedure and technique. The radiograph he deems valuable, but unnecessary in many cases. Thought we must bear in mind the element of danger, narrated the case of an enthusiast who found living pulps in pulpless teeth! This as an evidence of how mistakes could readily be made. Pointed out the fact that light and dark areas existed where there might be no diseased condition.

His paper was illustrated with the exceedingly excellent slides he has a reputation for showing.

Wendell C. Phillips, M. D., of New York, opened the discussion. He emphasized the idea of prevention rather than cure. Diagnose early and prevent was his idea. We rely too much upon aids to diagnosis. It should be more clinical. He was skeptical about the value of the X-ray on malignant developments, except lupus.

He was followed by Prof. Morris Shamberg of New York and Dr. E. A. Bogue and others, agreeing in the main with Dr. Brown's views, especially along the line of prevention.

The New York Institute of Dental Technique held a special meeting Thursday evening, April 25, especially on account of the presence in the East of Dr. F. B. Noyes whom we all desired to hear.

Dr. Robert Eugene Payne read a short paper entitled, "Implantation of Teeth in Connection with Pyorrhea Alveolaris." The discussion was brief. The president, Dr. Stanton, then introduced Dr. Noyes, to meet whom a large number had assembled. His paper was on cavity preparation, especially the enamel walls, amply illustrated with lantern slides of a very high order. There could be no discussion of such an essay, only commendation. In the afternoon at 5 o'clock an interesting series of brief clinics was given at the hotel, on gold inlays, amalgam work, and one case of implantation shown by Dr. Payne.

The metal filling class of the New York Study Club, organized for the study of Dr. G. V. Black's methods, attended in a body.

THE BURROUGHS.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

The First Permanent Molar:—The dentist is responsible in many cases for decay of the first permanent molars, because so little care is taken of the deciduous teeth that the parents get an idea that they are of little importance and they are not able to differentiate between the first permanent molar and the deciduous molar.—*L. S. Lourie, Chicago.*

One Cause of Dental Caries:—I am inclined to think that much of the decay of teeth comes from the food in cold storage which is in the first and second stages of decomposition. I do not believe we get the proper assimilation of such foods, and that lots of the trouble in our patients is systemic if we can only get at the cause.—*J. E. Hinkins, Chicago.*

Artificial Dentures:—As with natural dentures, the lips should be capable of free and easy movement over the teeth and the labial surfaces of the artificial dentures. The margins of the plate and its external contours should not encroach upon the line of action of any of the muscles concerned in these movements. The labial contours of the plate and the teeth should support the lips in those positions which have been deemed proper in the establishment of the fixed expression of the face.—*Charles R. Turner, Philadelphia, Pa.*

Condensation of Gold:—To obtain maximum specific gravtiy we must have proper cavity formation; well annealed gold in small pieces; a hand mallet in hand of a well-trained assistant; a small pointed preferably straight plugger; reinforcement of mallet with hand pressure; proper stepping of plugger; conscientiousness. Nothing is gained by the use of the eighth size pellets when density is required ,and they are only to be used in body of immense fillings. In starting filling and covering dentine the gold should be thick enough mass so that the plugger can not penetrate.—*K. E. Carlson, St. Paul, Minn.*

Success with Children:—The secret of success with children lies primarily in the manner in which we first meet them. Children, like grown people, are very prone to be influenced by first impressions. Having once gained the confidence of a child, it will take a great deal to shake that confidence; but on the other hand, if a child is not at first pleased, it may take much time to establish pleasant relations. I do not wish to convey the idea that a child is to be humored in every whim. Firmness should be used, yet the child can be made to understand, and will appreciate the fact, that we are doing what we know to be for the best.—*R. M. Pearce, Rock Island, Ill.*

Fitting Gold to the Walls and Margins of Cavities:—To do this it is necessary that we wedge the gold between the gold previously condensed and the walls of the cavity. In every instance in laying gold against a margin remember that it is impossible to fit gold perfectly against a wall by driving directly against that wall. It must be a lateral pressure against the gold previously condensed, in sufficient bulk to hold the last firmly. We may condense a very small amount of gold into an angle safely, but it is only into an angle that this can be done. The condensing should always be finished against the wall of the cavity by the wedging process.—*G. V. Black, Chicago.*

The Dental Club:—Among professional men the word club stands for a small membership and more frequent meetings, thus a greater amount of personal contact and frequent part-taking among the members, while in the society with its larger membership and usually less frequent meetings the same opportunities are either not to be found or if there, are siezed on by the ones most willing to push themselves to the front, leaving the average man the part of listener or onlooker. Another point against the larger organization is the great likelihood of politics creeping in with all the sequence of clique or ring leadership, all to the detriment of professional advancement.—*W. H. K. Moyer, Little Falls, Minn.*

The Contact Point in Children's Teeth:—Much of the discomfort experienced by children in mastication is due to the packing of food in the interproximal spaces wherever decay has occurred in these surfaces. If cement is used, it very rapidly wears away so as to present a space between the teeth and thus invite a lodgment of food. Not only this, but frequently we find the teeth drifting slightly apart as the jaw expands preparatory to the eruption of the permanent teeth, all of which increases the difficulty. In cases where amalgam can not be used and cement is unreliable, the patient may be made more comfortable with gutta percha than any other material, though this is, of course, more or less temporary in its service.—*E. D.*

Plaster Impressions:—When taking a plaster impression, I can readily tell whether I have a good impression or not, selecting a cup a little larger than the jaw and carrying the impression high over the cuspid eminence and over the tuberosities if they are prominent. I carry my impression high over the cuspid eminence for the reason that it is possible, as a rule, to wear the plate higher and make the artificial gum fuller to restore the expression lost by the extraction of the cuspid teeth. If the arch is high, I place wax in the posterior margin of the tray. To hasten the setting of plaster, as most of the plaster that is used does not set quick enough, add a pinch of salt, but do not add salt until the plaster is mixed.—*L. P. Haskell, Chicago.*

Legislation for Dentists:—Why is it that dentists in every State in the Union and in every Province in the Dominion of Canada find it so difficult to obtain anything from the legislatures of these various States? Why, because there are no dentists in these bodies. The dentists that are known best are the men with the flaming advertisements. Legislators know that these men are charlatans, but *they do not know* that between these and the decent men of the profession there is a gulf fixed. How could they know of the decent fellows? They are never heard of in the affairs of the city or State and the result is that the advertiser is looked upon as the leader of the profession. Let me say get out into the activities of life, into educational, or philanthropic, or civic, or political work—not for what you can get out of it, but for what you can put into it.—*A. W. Thornton, Toronto, Canada.*

The Scientific Side:—The problems of tooth loss and tooth destruction are dental problems, but because they involve the vital factor then for their solution must be brought to bear all that is to be known of the phenomena of vital action, cell activity, nutrition, physiological chemistry and the whole group of correlated subjects necessary to the understanding of the vital factor. Are we to surrender this, our birthright, to the scientific researchers of general medicine and rest content with our attainment as mechanics, or shall we go in and occupy this promised land, claim our birthright and make of dentistry what by virtue of its inherent possibilities it potentially is now, a really learned profession?—*Edward C. Kirk, Philadelphia, Pa.*

Manipulating Amalgam for Filling:—If you work the alloy and mercury thoroughly you will be able to remove much more mercury than you will if you only work it a little. Of course, you will also by thorough working remove a greater amount of the alloy which has gone into solution in the mercury, but this will not change shrinkage into expansion nor expansion into shrinkage. Analyses show that the alloy that has been removed in the excess of mercury is not in quite the same proportions that it was in the alloy that we began making the filling of. The mercury has carried out an excess of tin, leaving the filling with less tin in it than we expected. The effect of removing this tin is to strengthen the alloy. Great excesses of mercury do very little harm if removed before you have worked the alloy. Simply pouring mercury into the alloy does little harm.—*M. L. Ward, Detroit, Mich.*

MEMORANDA.

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, June 12-15, 1907.

For application papers and full particulars address Dr. Nathan C. Schaeffer, Secretary Dental Council Harrisburg, Pa.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

List of officers for the ensuing year: President, Dr. Kirk Davenport, London; vice-president, Dr. Charles Rathbun, London; treasurer, Dr. William M. Cooper, Frankfort; secretary, Dr. J. W. Gale, Cologne. The next meeting will be held in London in August, 1908.

J. W. GALE, *Hon. Secretary.*

THE WYOMING STATE BOARD OF DENTAL EXAMINERS

Will meet at Sheridan, Wyo., on July 1, 2 and 3, 1907, for the examination of candidates. All applications must be in the hands of the secretary not later than June 25th.

For further information and application blanks address

PETER APPEL, JR., *Secretary*,
P. O. Box 643, Cheyenne, Wyo.

OHIO STATE BOARD OF DENTAL EXAMINERS.

The regular semi-annual meeting of the Board of Dental Examiners of the State of Ohio will be held in Columbus, June 25, 26 and 27, 1907. Only graduates are eligible to examination.

Application, accompanied by fee ($20) should be filed with the secretary by June 15. For further information address

H. C. BROWN, *Secretary*,
185 East State Street, Columbus, Ohio.

THE JAMESTOWN DENTAL CONVENTION.

Full list of essayists for the Jamestown Dental convention: Professor W. D. Miller, of Berlin, Germany, subject, "Demonstrations of Preparation Relating to the Wasting (so-called Erosion) of the Teeth"; Dr. Charles L. Alexander, Charlotte, N. C., subject, "Gold Inlays"; Dr. F. T. Van Woert, Brooklyn, N. Y., subject, "Is the Cemented Filling the Filling of the Future?" Dr. R. Ottolengui, New York City, N. Y., subject, "The Angle Method in Orthodontia."

H. WOOD CAMPBELL, *Secretary*,
Organization Committee.

REPORT OF THE SAN FRANCISCO DENTAL RELIEF COMMITTEE.

This committee sends out a very comprehensive report of its work in connection with relieving distressed members of the profession and their families during the earthquake disaster. The treasurer's report is as follows:

Receipts from April 28, 1906 to December 30, 1906.....		$15,208.45
Disbursements:		
Relief orders	$10,783.75	
Newspaper announcements	65.40	
Mimeograph work	19.25	
Postage	22.75	
Clerical service	315.00	
Freight	32.55	$11,238.70
Balance on hand		$ 3,969.75

It is proposed by the committee to turn the balance on hand over to the National Dental Association as a nucleus for a National Relief fund, and it is suggested that the profession increase this fund till it reaches $50,000, for the purpose of taking care of worthy members of the profession who may come to need in their declining years.

SECTION I, N. D. A.

The following papers have been secured for Section I of the National Dental Association for the Minneapolis meeting, beginning July 30:

1. "The Over-Arch Bar in Bridge Work," Dr. L. C. Bryan, Bazel, Switzerland.

2. "Some Practical Experiences Theoretically Expressed," Dr. Emory A. Bryant, Washington, D. C.

3. "Treatment of Mal-Occlusion of the Deciduous Teeth," Dr. Guilhermena P. Mendel, Minneapolis, Minn.

4. "Evolution," Dr. Charles L. Hungerford, Kansas City, Mo.

5. "Effect of Excess of Mercury Upon Shrinkage, Expansion, Edge-strength, Flow, Change in Composition and Stability of the Dental Amalgam Alloys," Dr. Marcus L. Ward, Detroit, Mich.

6. "Porcelain," Dr. C. M. Work, Ottumwa, Iowa.

7. "Physical Condition of or Pertaining to the Human Teeth," Dr. F. G. Corey, Council Grove, Kas.

8. "Method of Replacing Broken Facings on Crowns and Bridges," Dr. J. V. Conzett, Dubuque, Iowa.

There may be a few additions to the list as all the returns are not yet in.

D. O. M. LeCron, *Chairman*, Section I, N. D. A.
E. P. Dameron, *Secretary*, Section I, N. D. A.

RECENT PATENTS OF INTEREST TO DENTISTS.

848,001. Head-rest for barber and other chairs. Eugene Berninghaus, Cincinnati, Ohio.

848,403. Dental obtunder. Perry R. Skinner, Amsterdam, N. Y.

848,406. Tooth-pick machine. Willis W. Tainter and C. P. Stanley, Dixfield, Mo.

848,334. Combination dental plugger. Percy E. Williams, Savannah, Ga.

849,208. Dental handpiece. Lyter H. Crawford, New York, N. Y.

849,209. Combination mouth mirror and lamp. Lyter H. Crawford, New York, N. Y.

849,335. Electric dental furnace. Lewis Markwitz, San Francisco, Cal.

848,693. Tooth-pick holder. Charles H. Sharp, Lockport, N. Y.

848,863. Reinforce and backing for artificial teeth. Isidore Stern, New York, N. Y.

849,297. Dental swaging device. George J. Weber, Liberty Center, Ohio.

849,595. Head-rest for barbers' chairs. Benjamin F. Buchanan, Camden, N. J.

849,702. Guard and moistener for dental tools. Charles A. Sevier, Jackson, Tenn.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

THE N. D. A. CLINIC.

It seems fitting at this time to say something more regarding the clinic which shall be held in Minneapolis on July 31 and August 1.

Dr. W. N. Murray, the chairman of the Inlay Section, will have everything which is new and of interest demonstrated in cavities in the human teeth. There will be no less than twenty clinical operations. The foremost men in the profession, who are believers in the use of some kind of an inlay will be on hand ready not only to demonstrate, but to do everything possible that will interest others in their specialty.

Dr. F. S. Yaeger, of St. Paul, is the superintendent of the Table Clinics.

Dr. Yaeger will have entire charge of this speceial department and he will appoint his own corps of assistants.

Those interested in metal fillings may rest assured that this special part of the clinic will not be neglected. The members of the G. V. Black Dental Club of St. Paul, the Conzett Club of Iowa, the Searl Metal Filling Club, the Woodbury Club of Council Bluffs, as well as other organizations of this kind, have signified their intention to be present and take an active part in the clinic. Members of these various organizations are so favorably known that it seems needless for me to say anything about them.

There is every evidence at hand that the Table Clinics will be along their usual high order. Everything which is of value will be demonstrated for the benefit of those who attend.

Special demonstrations have been arranged for the first day of the clinic. Dr. William Finn, of Cedar Rapids, Iowa, one of the leading teachers of advanced work in the middle west, will bring with him to the meeting large wooden teeth with cavities cut in various surfaces. Dr. Finn will demonstrate the Black methods of preparing and filling cavities with metal fillings. There will also be a number of young ladies present—dental assistants—who will demonstrate the Black method of preparing gold cylinders and pellets. These demonstrations will take place at the first day's clinical session.

Another thing which may be of interest to a great many practitioners is a clinic which will take place at the second day's clinical session. A patient having approximating cavities in the upper right bicuspids will be operated upon by brothers. Dr. G. N. Beemer of Mason City, Iowa, will fill the cavity in the mesio-occlusal surface of the second bicuspid, and upon its completion Dr. H. J. Beemer of Newton, N. J., will then make the operation in the disto-occlusal surface of the first bicuspid. This operation will give everyone who is interested a chance to observe the methods employed by two men who live in different sections of the country, but who are practicing along similar lines. These are just some of the side issues, so to speak.

There is much more which I might say, but I have not the time.

In the past, the time mentioned on the program for the beginning of the operations has been understood to mean any time that would suit the operator. I do not know what the clinicians will do at the first day's session. The operations to be made at the second day's session will begin promptly on time.

The clinical program will be published next month. This journal will have it as complete as possible.

E. K. Wedelstaedt, *Chairman* **Clinic Section,**
New York Life Building, St. Paul, Minn.

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, JULY, 1907. No. 7

LIMITATIONS OF DENTAL EDUCATION.*

BY G. V. BLACK, M. D., D. D. S., SC. D., LL. D., CHICAGO.

It is a self-evident proposition that such an education in dentistry as will fit a suitable number of young men to serve the people in the best possible manner, will be the best that can be given. Too rigorous a requirement will limit the number so that there will be too few to serve the people; too lax a course will fill the profession with incompetent men. Therefore the best education we can rightly require is not the highest degree of education the primary liberal arts and professional schools might give.

There are many influences acting to limit the education that may be given. These are closely akin to those which limit the education of the general public. It is desirable that education for either a business or professional career be such as our modern college of liberal arts give, supplemented by a business or professional training. It must be clear that in the present organization of society, such a course of study for everyone becomes impracticable and would so limit the number entering the dental profession that there would be too few to properly serve the people. Such an education requires that the first sixteen to twenty years following the sixth year, or school age, shall be devoted to school work, and the business or professional training obtained later. If this latter demands three or four more years, the person will be twenty-four to thirty years old before he is ready to enter upon his work. While it is desirable and we may expect that a considerable number of young men will obtain this education in the shorter time mentioned and enter the ranks of dentistry thus equipped it is clear that we cannot at the present time, or at any time within the near future, demand this as the minimum limit. At present the earning power of the average individual is insufficient to enable him to spend this proportion of his life in educational preparation. Further, advance in age tends to bring fixity of notions for most men and on the average those who enter the professions early in life gain a better discrimination of conditions and a higher degree of finger skill when that is demanded, as is eminently the case in dentistry. This is an additional reason why men should become dentists as early in life as a reasonable education will allow.

---

*Read before the Illinois State Dental Society, Quincy, May, 1907.

We as a profession serve the people in relieving such of their distresses and ills as occur from diseases of the teeth and associated parts, and as such are a part of the medical profession. For our purposes we may consider the education necessary to those who follow the law, politics, divinity, medicine, dentistry, civil engineering, etc., as among these we find the orders of life-work that, aside from the questions of food, clothing and the more ordinary forms of shelter, mean most to the welfare of men and the progress of civilization. These and some other callings that are very nearly associated with them, constitute what may be termed the professions. The persons who enter upon these as their life work are supposed to devote themselves to the welfare of man and to the communities in which they live. If some serve the state or nation instead, it in no wise changes the obligation to serve in the interest of humanity and the advance of those phases of science on which civilization is founded. In this the professional man is different from the laborer or tradesman. In the trades, manufactures or building, the business is in the use of capital or finance in buying and selling, or the exchange of commodities, and the man uses his mental endowment, quickened with his educational preparation together with his capital, in the exchange of goods among men that each may obtain that which his needs or his tastes may demand. In this the goods are the subject of sale and purchase. The professional man sells no goods. In general terms his equipment is his mental endowment supplemented by his training, which has become an integral part of himself. That he cannot sell, but it enables him to labor for the benefit of man.

A man in difficulty with his neighbor over a question of property, may choose his attorney, but is not in position to determine the value of the attorney's advice, nor choose what it shall be. He cannot buy of his attorney. He may accept the service and pay the fee, but the attorney determines the character of the service. The sick man or his friends may choose a physician, but the physician must determine step by step what the treatment must be during the progress of the case. While he is by usage entitled to his fee, there is no question of barter in the service rendered. His obligation is to use his full energy and best judgment for the benefit of his patient independent of any other consideration. So also the dentist ministers to the ills of man in his legitimate field. The object of his special education is to fit him for determining that which will most certainly give freedom from suffering and best fit his patient for future usefulness. The patient can no more determine what this may be than the man who is sick with a fever can determine the medication suited to his case. He must depend upon his dentist. The professional man doesn't advertise or sell; he serves; he uses his mental endowment and special training to relieve the difficulties and distresses of men, and for the benefit of society or of the state.

If we can admit that there are differences in the degree of moral obligation among men, the moral obligation of the professional man must be greater than that which rests upon any other, for those whom he serves are dependent upon his moral integrity and his skill to a degree that is greater than the obligation of any other. His obligation to obtain the best practicable primary and professional education is in the same ratio.

Just as the medical profession becomes proficient in its service, the intelligent public comes to depend upon its members for that service and make use of their training and judgment. As it is in the medical profession, so it is in all others. As the civil engineers as a profession become proficient in their calling, those who have large engineering works come to depend upon them for advice and plans of building. As dentists become proficient in their calling and are enabled to enforce their opinions by the results of operations, the people come to depend upon them and make use of the service they can give.

This brings us to another proposition. In order for the service of the skilled professional man to become available to the people, the people themselves must have that degree of education in the use of that service which will enable them to employ it efficiently. This may be said also to include in a lesser degree, the financial means of its employment. The early settlers in this country were not in position to employ the highest skill of the architect for the planning of the buildings they needed; a much lower degree of skill which they found among those not especially trained served their purpose, and in the main served it well. As another illustration we may take electrical engineers, a class of professional men who have sprung into existence within the memory of most men of middle age. They may devise electrical apparatus for the use of the people that is good and well calculated to do the work designed, but before it will become available for extended use the people must learn the conditions of its use and the results to be accomplished. In other words the professional man cannot make use of the higher degree of training without a corresponding advancement among the people whom he serves. It is not necessary that the people all become electrical engineers in order to use electrical instruments and derive the benefits of their use, but the conditions of use must be learned. The highly trained physician who is placed in a community of persons who do not know the benefits to be derived from his employment, will be unable to give them that service which he could give to a more intelligent community, either directly in the curing of their ills, or in protecting them from unsanitary conditions. In most instances the professional man needs, to enable him to do the best service, that the intelligence of the community shall support and supplement his efforts. So it is in dentistry; we as a profession cannot do that which should be done for a people who do not know of the benefits to be derived, and who are unable to do their part in making use of the treatment that we may give them. The efforts of the dentist also must be supplemented by the intelligence of the community which he serves.

In the professions it seems useless to place the minimum degree of education higher than the intelligence of the people as a whole will support by a sentiment that will cause a sufficient number of young men to enter into the work. A higher degree of education may serve in the development of science, but cannot render the immediate service to the people that is designed. The state demands that the service to the people be a reasonably good service. The state does not demand the highest efficiency that may be obtained by a liberal education, but a service that will be reasonably safe, and demands a certain minimum education before it will license practitioners. This is done for the safety of the community, protecting individuals who can not protect themselves. This is done also under the theory that all are entitled to a degree of service that is sufficient to render them useful citizens and give them that reasonable protection against their ills which professional service can render. It often happens that a degree of service less efficient than that which will be demanded by the more highly educated community will be very much better than no service.

A condition has arisen in England in which this is sharply illustrated. A number of years ago the British Dental Association went before the House of Commons with a bill to regulate the practice of dentistry, which became a law. This law was supposed to prohibit any one practicing who had not passed through a prescribed curriculum of study and had been licensed regularly for practice. When supposed violators of this law were brought before the courts, the decision was that the wording of the bill prohibited persons from announcing themselves as dentists or dental surgeons, or words to that effect in any printed matter, signs, bills, door-plates, etc., but that the law did not prohibit the act of practice. Therefore, any one can practice dentistry in England provided he does not use this means of announcing himself, and many are so practicing. Under these conditions the British Dental Association by its Committee, recently appeared before the House of Commons again, asking that a new bill be passed which would prohibit the act of practice. The Committee of the House of Commons to which this bill was referred, entered into an exhaustive study of the subject, called witnesses and took testimony as to the effectiveness of the dental schools in England and the needs of the English people, and the conclusion was that entry into the dental profession through the schools had been made so difficult by the length of time and the fees demanded, that the schools were not qualifying a sufficient number of men to serve the needs of the people, and therefore sharply refused to interfere further until this could be done. The grounds for this decision were that if the people could not have a highly efficient service, they must be permitted to employ a less efficient service, as being better than none. The requirement for the L. D. S. in England was a primary education about equal to that given by our high school, and four years' training in dentistry, with fees that on the whole ranged very much greater than those in this country. The dental schools in England have dropped from the four year course to a three year course in consequence of this decision, with a corresponding diminution in fees. We have had nothing of this kind in this country, and with our present progress we seem in no such danger, but if we should ever render the entry into our profession so difficult as to seriously reduce the number of practitioners, our legislators would speedily remedy the matter. We ought to be able to maintain a higher grade of dental education than England for the reason that a very much larger percentage of our people make intelligent use of dentistry and give us stronger support.

In order for the usefulness of dentistry to be fully received by the people, they must become intelligent in the conditions of its use. The development of the ability to impart this is an essential part of dental education. This must be taught by the dental profession and placed before the people by each individual in his daily practice. Its first element is confidence in the benefits to be obtained. Coupled with this there must grow up in the public mind an appreciation of the conditions under which efficient dental service can be rendered and the necessity of submission to these conditions in order that the benefits may be derived; and finally, a range of observation by many people of the results of dental operations which will give a fair judgment as to what may reasonably be expected. This will develop a power of discrimination that on the whole will give a judgment between success and failure of individual operators in giving this service that will have in it that element of correctness that will act as a spur to excellence in the body of the profession, and the weeding out of careless or incompetent men. In this it is not in any wise expected that the public will become dentists any more than it was expected that all the people would become electrical engineers. This is to be taught almost entirely by practitioners in their daily intercourse with patients in their offices, and through them diffused to the general public.

Pretty careful observations through many years convince me that little can be done in this direction by public prints which are supposed to give the people information regarding dentistry and the care of their teeth. In this matter, however, we as Americans seem to have done better than the dentists of any other country, if I may trust my own observations abroad. There is a larger proportion of American people who make use of dentistry with a fair degree of intelligence, than any other. In some investigations of this made a few years ago I found at that time the use of dentistry by the American people had more than doubled within ten years, and I am satisfied this rate of increase is continuing and ten years from now it will require many more dentists to do the work required by our people than we have now in practice.

The different states of our common country have passed laws regulating the practice of dentistry. Laws something similar to these are now in force in every civilized country on the globe, so far as I know. These have in every instance been in the main such as have been recommended by the dentists of the individual states. The first laws were timidly drawn and even more timidly enforced by the boards appointed to administer them. These have been replaced by new and improved laws so that in the large majority of states the boards appointed have authority sufficient for a fairly rigorous regulation of dental education and practice. Especially it is their duty to see to it that every person entering practice exhibits the ability to give reasonably effective service. Most of these state boards have the right under the laws to determine the education, both primary and professional, of persons entering the practice of dentistry, so long as the requirements are reasonable. They have also generally the right under the laws to examine the work of dental schools and to judge them as to their reputability, basing this upon compliance with reasonable rules and regulations. Therefore the schools are to that extent under state control. This is done that the people may be assured of reasonable proficiency in those licensed to practice. Practically the dental profession controls the provisions of the laws that have been passed and should control those that may be passed in the future, for it is their business to study the needs of the people. In the same way attorneys control the rules and regulations governing the practice of law, and medical men control the formation of laws governing the practice of medicine, etc. This is done by advice to legislators. Generally these act in the capacity of societies or associations through committees which advise with legislators as to what laws will serve the people best.

This being true, every dentist is interested in these laws and should study these questions with the greatest care in order that he may influence them favorably. This is a necessary part of his professional duty as much as to properly care for the cases which present in his office, for he can often serve the people better by his efforts in this direction than in any other. While it is true that the governors in most of the states appoint the boards who administer these laws, it is also true that most governors will listen to and be in a degree controlled by the wishes of the professions in the personnel of the appointments, when the necessities are wisely and judiciously presented. Every man in reputable practice should be ready to advise and assist, in connection with his association, in this work, and therefore should become as intelligent as possible as to the conditions and necessities in the formation of laws regulating dental education and practice, to the end that the people may have the greatest benefit possible, and his profession as a whole derive the greatest honor.

In the past the faculties of the dental schools have had their association, and the members of the examining boards have had theirs. These two associations have usually met at the same time and place, but separately, and with occasional differences of opinion, harmonized by joint committees, have done most excellent work and dental education has prospered under their joint influence. However, the National Association of Dental Faculties has always been a turbulent body because there have been, as it has seemed to me, so many conflicting interests to be conserved. Fifty or more dental schools have been banded together in one body and have been endeavoring to form rules under which all could work. These schools have been differently organized; some are departments of great universities that are able to tide them over a temporary shortage of funds; some are departments of state universities which may receive state aid; many of them are the property of individuals or stock companies which are dependent upon their incomes from year to year for their existence, while a number are actually supported by the liberality of the professors in charge.

Under these conditions a shortage of students that will diminish the income will affect some schools more seriously than others. Yet I believe there has been much honest effort by all concerned to do the best things for the general promotion and improvement of dental education. Under the influence of these two bodies, the educational requirements for entry into the dental schools was advanced from practically no inquiry in 1884, to the minimum of two years of high school in 1901, and from a rather uncertain course of two years of about five months each in 1884, to the minimum of three years of seven months each in 1901. During this period dental schools enjoyed very remarkable prosperity. The number of schools increased from eighteen in 1884 to fity-four in 1901, when a further advance to a course of four years was voted almost unanimously by the Faculties Association. Personally I did not favor this form of advance, preferring two more years of high school, but it was so evident that it was the choice of a large majority, that I voted with the rest. It had already become apparent to some of us that there was coming a time of diminished attendance in dental schools. The country was in the enjoyment of unparalleled prosperity. There was and has continued to be profitable employment for energetic young men. Wages have been higher than ever known before. Under these circumstances a fewer number will turn aside and spend three or four years and pay the fees to acquire a professional education. Under these conditions the four years course became a stumbling block in the National Association of Dental Faculties. The first matriculation period for the four years course showed a great reduction in numbers of freshman students, and many of the schools took alarm and clamored for the rescinding of the order for the four years course. After a stormy session adjournment was had with only the barest majority for the continuance of the four years course. Clearly this was too small to constitute a safe working margin. Shortly afterward a special meeting was called, which rescinded the four years course, returning to the former three years course of seven months. While there was great dissatisfaction over this matter, I am of the opinion that the general intention of every member was good. While personally I worked with all my might for the maintenance of the four years course, each of those opposed to me was probably just as honest in his view.

If we now examine the work of the dental schools in the graduation of students for the twenty-two years since the organization of the National Association of Dental Faculties in 1884, we find that something over thirty-three thousand young men have been graduated. The actual official reports that I now have give 32,701. If I fill the blank years (those of which I have not yet the reports) by an estimate based on the average of the two preceding and two succeeding years, it gives 33,598 as the total.

TABLE BY YEARS OF GRADUATES IN DENTISTRY FROM 1884 TO 1906.

YEARS.	GRADUATES.
1884	421
1885	503

YEARS.	GRADUATES.		
1886	497		
1887	620		
1888	758	11,302.	
1889	802	Average per year 869 for the first thirteen years.	
1890	983		
1891	1,242		
1892	1,474		
1893	415		
1894	902		
1895	1,278		
1896	1,407		
1897	1,683		
1898	1,960		
1899	2,168		
1900	2,149	21,401.	
1901	2,370	Average per year 2,140 for the last ten years.	
1902	2,261		
1903	2,285		
1904	2,291		
1905	2,711		
1906	1,523	32,703	Total reported
	Add estimate	879	for years not
	reported.	33,582	Estimated total.

This is certainly not far from the actual number. Of these a few have gone to other countries so that the best estimate I can now make is 33,000. But these figures do not fully represent the facts. During all of the first half of this twenty-two years a large number of dentists entered practice without attending dental school. At first the boards examined all applicants, but gradually men found that the easiest way to become able to pass the examining boards was through the dental schools. Within the last ten years practically all have passed through the schools. During this ten years the graduates of which I have record have averaged 2,140 per year. As forty years is the average expectation of life of persons of twenty-one to twenty-six years old, this number annually would maintain a force of 85,600 dentists.

Of the dentists now in practice in the United States and Canada, we have not very exact data. Polk's Dental Directory is probably the best available. This for 1906 contains 35,274 names. But no such book contains all. If we add to this ten per cent to cover omissions we will have 38,801 as the total number.

The expectation of life of men entering dental practice, assuming that the ages will average twenty-one to twenty-six, is forty years. Assuming that all of the men actually spent their life in practice, the graduation of 970 men per year would keep up the number. But many men, how many we do not know accurately, drop into other employments. If we assume that twenty per cent are lost to dentistry in this way and another ten per cent is necessary to provide for the increased number of dentists required, it would require 1,333 additional men annually to provide the necessary number. Or even upon the supposition that those going into other employments were thirty per cent and necessary to provide for the increased demand were twenty per cent, 1,663 graduations per year would be necessary. From this it would seem that the number being graduated is very excessive. And yet if we look carefully about us we find that the development of the use of dentistry by our people is so rapid that there is no notable excess of dentists. Those in practice today seem to be doing fully as well as those of ten years ago.

Some of our graduates fail for various reasons to enter into practice, and many, perhaps of the less competent drop out after a few years. Those of us who have been endeavoring to keep in touch with our graduates have some appreciation of this and yet it would be difficult to make a satisfactory estimate for the whole country. It is sufficiently certain, however, that there is no immediate danger of a shortage of dentists to serve our people, even though the number of graduates should be somewhat reduced for a few years. Under these circumstances the state boards seem to be fully justified in demanding a better educational qualification of students entering the dental schools, and further improvement in their professional training as well.

Under the conditions existing when the Faculties Association rescinded the four years course and returned to the three years course of seven months, continuing the requirement of two years of high school for entrance, the National Association of Dental Examiners refused to accept their decision.

After a careful study of the conditions (which I have herein more fully given) they advised their constituent state boards to require of the dental schools a course of three years of nine month each, or an equivalent in the form of thirty-two weeks of teaching, excluding holidays and including Saturdays. With this additional time the requirement as to primary education was advanced from two years of high school to graduation from an accepted high school, or its equivalent education to be determined by examination by the state superintendent of public instruction or equivalent officer or his deputy. This was accepted by the state boards and the schools were asked to comply with this requirement independently of their membership in the National Association of Dental Faculties. Within a short time after the announcement of this decision of the state examiners their proposition was formally accepted by a majority of the dental schools, but has been sharply resisted by a considerable minority. It is desirable that all of the dental schools accept these conditions as a permanent settlement of the controversies that have marred the progress of dental school work for several years past.

With these most disturbing subjects of contention transferred to the state boards, settled and out of the way, there is most important work remaining before the National Association of Dental Faculties in the improvement of the curriculum and associated educational matters that should absorb its time and energy in the years to come. These difficulties and disagreements have been a large factor in the influences that have diminished the matriculations in dental schools for the last few years. In the unsettled conditions that have prevailed young men desiring to enter dental schools have not known what to expect or what would be required of them. Sometimes they have been uncertain whether or not they could be examined and licensed to practice by the state boards if they graduated from the dental school of their choice, and in the maze of disagreement and unsettled condition of affairs in dental education, have turned to other lines of employment.

It is high time that for the general good of our people and of the dental profession, these difficulties should be ended and settled in a way that will give permanence for years to come. Personally, I am fully convinced that the plans of the examining boards which have been given and have been accepted by a majority of the dental schools should be fully accepted by all as the law of minimum requirements. With this should go the understanding by all that this minimum requirement shall not again be disturbed for many years to come, with a sentiment within the dental profession as a whole that will as rapidly as practicable enforce it in all of the state laws and in all dental schools.

The members of the faculties of dental schools are, by a sentiment existing in the dental profession, prohibited from becoming members of dental examining boards while engaged in school work. Members of the examining boards have none of the perplexities that arise by reason of personal interest in the success of a particular school. They are free from that embarrassment to their judgment in dealing with these questions, and, other things being equal, are more likely to arrive at just conclusions and permanence in their requirements.

There is and should be nothing in this minimum requirement that will prevent individual schools on their own initiative from adopting a higher standard whenever they may see the way clear to do so, but this in no case should become a state requirement. It is quite true that this requirement of students will not fit them for practice as efficiently as many of us could wish or as may be required by many communities. For this we must depend upon those who of their own notion will come to us with a higher education to begin their professional work and the personal initiative and further study of the more industrious men after leaving school. Of these we may reasonably expect a much larger number in the future than we have had in the past. The professional sentiment, and in many communities, the popular sentiment, will require this, but it need not become a matter of law in order that we may have that reasonably efficient service that will be sufficient to protect our people. Indeed, it is not the function of the professional school to give its students the highest order of efficiency, but rather to give them such a basis for future study that this, combined with their experience in practice, will round out the fully developed efficiency of the higher order.

In conclusion I want to appeal to every practitioner to study this whole matter of the limitations of dental education with great care to the end that you shall not expect the impossible of dental schools. Remember that dental schools have no power to control the acts of their students after they go out into practice. It often occurs that a student whose conduct in school has been exemplary, who has made a good record, disobeys every precept of ethics and morality he has been taught, after leaving school. Though the school may be thoroughly disgusted with such a result, it can do nothing but regret that it has not the power to make men honest.

Remember also that the dental school cannot make all of its graduates efficient practitioners, nor can any state board sift out all incompetent men, or men who may rapidly become incompetent through careless or immoral habits. A student may, under the influences thrown around him in school, do fair work both in his studies and in his operations, and after the last cramming for the state board examinations he may throw aside his books, fall into careless habits in operating, and within a few years become a thoroughly incompetent man. I have known such students to sell all of their books to the second-hand dealer the next week after passing these examinations. I wish to heaven they would sell their instruments also and seek other employment. The professional man has no right to be other than a continuous student. Therefore, until we can have laws by which the licenses of such men can be rescinded, we may expect some men will be dishonest and others careless, no matter how well the dental schools and the examining boards may do their work.

I appeal to you also to study the limitations of education that by your advice and good council this education may be kept within reasonable bounds; also that it may be made sufficiently rigorous to render the highest degree of service to the people possible, but with a watchfulness that the proper lines of limitation be not overstepped.

As professional men we should work together for the benefit of all our people and so manage our dental education as to secure this end. If we work together with zeal and skill to that end, our profession will win high honors in the future.

DENTISTRY A SPECIALTY OF MEDICINE.*

BY DR. H. T. SACKETT, FOND DU LAC, WIS.

The estrangement of dentistry from medicine, which has existed from its very inception almost to the present time, finds a ready explanation in the historical fact that the art of dentistry had reached a highly perfected state centuries before the practice of medicine as a healing art was known. The work of the early dentist was, therefore, wholly that of the prosthetist.

---

*Read before the Wisconsin State Dental Society.

The best information to be had shows that removable dentures, crown and bridge work were common to the Romans, 450 B. C., while Pliny, an early historical writer, tells us that physicians were not known in Rome for several centuries after that time. Nor is evidence wanting to show that the Romans might not have developed the dental art to the high state of perfection it had reached in their time. Numerous specimens of a high order of prosthetic dentistry have been excavated from the buried places of the Etruscans, where civilization was much older than the Roman, showing that this primitive people were as skilled in the art as the Romans, centuries later, after having swallowed up the former, by conquest.

No mention is made in the medico-surgical writings of Celsus or Galen of dental prosthesis, while Hippocrates touches only upon the extraction of teeth, thus clearly indicating that in their day the dentist was an artisan only, and knew nothing of medicine.

The one a mechanic, the other a professional man, the dentist and the doctor have tracked the centuries in parallel lines, both striving for a common goal, yet each independent of the other.

It has remained for modern pathology to illume the common ground on which both may meet, and greeting each other as brothers, discuss their common interests, to which both have too long been strangers.

If the dentist has been slow in getting at the underlying causes of the local conditions requiring his artistic skill, equally culpable has been the physician for not having earlier recognized that certain morbid states produce oral symptoms, as well as in every other part of the body.

The gain to be made by recognizing a community of interest is no less an advantage to the one than to the other, and, therefore, becomes a matter for mutual congratulation. Dentistry, in our time, is not prosthesis alone, nor is medicine all-sufficient in all cases without a knowledge of dental conditions.

The mouth is but a part of the body. The blood which flows in its arteries is the same as flows through every other part of the body. The nerves of the teeth are but a part of, and ultimately connected with, the nervous system as a whole. An impoverished blood supply, that fails to properly nourish, or sets up morbid action in another part, may also do so in the mouth, and morbid conditions in the mouth may establish reflex conditions in remote parts, or vice versa. Dentistry cannot be divorced from medicine. It is a part of medicine, and the stomatologist is as much a specialist in medicine as the rhinologist, the laryngologist, the oculist, or any other "ist," and what is true of every other specialty in medicine is no less true of dentistry, that every man who essays to practice a specialty should first be well grounded in the general principles of medicine. Let special preparation come afterward.

That dentists are appreciating the systemic causes of oral conditions may be taken from the fact that they are establishing four-year courses in their colleges, which includes a thorough study of all the fundamental branches of medicine. The dentist of the future will know the cause of the diseases he treats, and knowing the cause, will treat them by removing the cause, and being a specialist in medicine, will have a clearer comprehension of the remote effects of oral conditions than the general practitioner, and thus be of inestimable service to him, but like all specialists, may err in believing his special field broader than it really is.

An interesting volume might be written upon the relationship of primary dental conditions to various morbid states throughout the body. The present development of specialism in medicine has shown us the various reflexes emanating from different organs, to which the teeth constitute no exception.

Such dental conditions as caries, pulpitis, impacted teeth, exposed necks, imbedded roots, serumal calculi, hyper-cementosis, and pericementitis are commonly responsible for facial neuralgia, and may also account for many reflex troubles in the ear, eye and nose; neurasthenia, epilepsy, hysteria and chorea, as well as paretic and spasmodic affections of the rectus eye muscles and other muscular groups.

My purpose at this time is to invite your attention to the fact that the practice of dentistry is a specialty of medicine, and is entitled to as much consideration as any of the foregoing. It is important that each specialist should work in harmony with the other, which will enable us to render the best service possible to our clientage.

INTER-STATE LICENSE EXCHANGE.

BY DR. F. R. HOUSTON, GREEN BAY, WIS.

The Stockton Resolution was presented some two years ago at Asheville, N. C. It has done some scattering good, and created some little discussion among members of various dental societies in some of the Eastern states, and incidentally, it has shown some of the curious facets of human nature as exemplified in the arguments, pro and con, over this resolution and its possible fearsome effect on the status of dentistry, if made a law in all states.

Most of the states, or the members of the dental profession in these states who tell the others what is good for them, have taken refuge in the claim that their laws do not permit any such interchange of license as is contemplated by this resolution.

This, in fact, is true, but why, in the name of common sense and justice, haven't they changed them, if this is the only obstacle to overcome?

Iowa is the only state in the Union that has taken the resolution and acted squarely upon it, and is thereby the only state that can lay claim to perfect fairness and equity in its dental laws and projected treatment of practitioners from other states.

A late amendment to her existing dental laws has advanced her about a century beyond her sister states, or, perhaps more fitly worded, has relegated those other states to the 17th century, while she, alone, is striving and advancing along 20th century ideals. The amendment adopted by Iowa is doubtless familiar to you as it has been copied in most of the journals.

It recognizes certificates from other states and territories and provides for the issuance of certificates of removal from the state. It simply requires that the state from which the practitioner may come shall have and maintain equal standards of laws regulating the practice of dentistry and recognize exchange certificates issued by the Board of Dental Examiners of Iowa.

This would not seem to be such a very dangerous innovation, as it leaves each State Board to be judge of a dentist's fitness to remove from a state and, surely, if they can be entrusted with the

---

*Read before the Wisconsin State Dental Society.

entrance requirements of a practitioner, they can as safely be with the requirements for exit.

Yet, watch and see how many moons' full and wane before another state will fall into line with as just and as consistent a law as Iowa.

About a dozen other states now offer a faint-hearted exchange with other states, but most, if not all of them, are states whose geographical location and climate preclude the possibility of a very general desire to locate therein by practitioners already in practice some time, either in search of health or in anticipation of a great advance in values or increase in population.

If this does not indicate that many or most of the states, through their controlling coteries of dentists, do not desire and intend to keep down the visible supply of competitors, then am I indeed destitute of all reasoning faculties or powers of observation, and am but a clamorous old woman.

Why should we, as dentists, hedge ourselves around with laws more strict than those governing the practice of Medicine and of Law?

These three professions—Medicine, Law and Dentistry—constitute a Trinity necessary to every community, as, at some time in the life of an individual, he or she is compelled to seek professional relief at the hands of a member of one of the above mentioned three professions.

I rank them just as I have given them, in what I regard as their relative importance to the people, and I believe that this arrangement is instinctively made by all, even by those who probably never gave it a minute's thought or consideration. I believe that the economic reasonableness of such arrangement will appeal to all.

I place Medicine first because, as man is the highest created being, and the creator and user of all values, so is the profession that watches over him at his birth, advises him as to proper methods of living during maturity or during his time of greatest value to the state, and attends at the pitiful ending of all ambition and power—Death—easily the first in value of its service to the individual and to the state.

It is impossible to estimate the value of a life suddenly snuffed out at the zenith of its power and energy or its possible achievements, had life been continued. Man may lose every thing of material value and yet arise triumphant over all if only his life and health remain.

I place the practice of law next because property and personal rights naturally follow life or begin with life and end with death. The average person, if suddenly called upon to decide, will sacrifice money and possessions in an effort to save his life or regain his health.

I place Dentistry third in the list because such is its true economic position. While it must be admitted that we, as dentists, do more to alleviate human suffering, promote physical comfort, and beautify the human face than medicine, yet, it must never be lost sight of that the factor of life and death is missing in our work. Incompetence, or carelessness, or indifference, or ignorance, with us, is not liable to result in the loss of a life to the community or of a member of the human economy necessary to success in the world of work, as an arm, a leg, eye-sight or sense of hearing.

The suffering incident to dental lesions may be neglected throughout a long term of years, and often is, and not one chance in 100,000 cases for a fatal termination, while in medicine or surgery, the condition of acute suffering is very apt to be the red-light warning of a disease, which, neglected, or mismanaged, or misunderstood, may result fatally.

With the remote possibility of septic infection from a neglected abscess in a poorly nourished patient, or from anæsthetics, general or local, death is never a possible contingency from direct dental influence.

I am as deeply appreciative of the value of natural teeth, or of a tooth, as any man can be, yet the fact remains that I know, and you know, that a person may lose one tooth or ten teeth, or all of them, and yet continue a power in the world of business or, if a woman, in society.

The loss need never be known because all the demands of function or of esthetic requirements can be supplied by the intelligent dentist in well constructed artificial appliances.

All of these comparisons, to the intended disparagement of dentistry, are to show, if possible, the injustice of placing stricter laws, and enforcing more prohibitive examinations, and giving less opportunity to move from state to state, than do the professions of Medicine and of Law in the various states, members of either of these professions being capable, if incompetent or dishonest, of infinitely more damage and danger to the individual and to the state, than those practicing dentistry incompetently or dishonestly.

A lawyer, once admitted to the bar of a state, can go to almost any state and secure a license without further examination. A few states require three to five years' practice before admitting them on the license of another state. If unworthy, a lawyer may be disciplined by his fellow practitioners and, upon conviction, be disbarred in his state, which act, also prevents him from practicing in any other state, for so long a time as the period of disbarment is in force.

This disciplinary power is never invoked to punish an advertiser of low prices or of especial great skill, but ethical lawyers simply ignore his existence.

The profession of law is so broad that its members apparently hesitate to lay any obstacle in the path of another and then seek refuge in the plea of protecting the dear people. A flagrant breach of faith with a client, and it need not be so obvious as to convict him in a criminal proceeding, either, and he is liable to be summoned and tried by a regularly appointed legal tribunal. Upon conviction upon any criminal charge, he is always disbarred.

How about Dentistry? Five adjoining states—Wisconsin, Illinois, Indiana, Michigan and Iowa—have inter-state exchange or recognition of license in the medical profession. Why don't we? Is it because we are a broad and tolerant class, or because we are a narrow-minded lot of artisans?

Our laws are all made and enforced by ourselves. If we have laws that declare me or you to be a law-abiding and professional man in Marinette or in West Superior, and if I or you move just across the state line, a violator of law in Menomineee or Duluth—whose fault is it?

It is not the average layman, for he is not interested in dental legislation, or who practices and who does not.

If a law were introduced into the legislature of every state in the Union, making exchange and recognition of license between states a fact and compulsory, the only antagonism met with would be at the hands of state boards and assemblymen and senators, acting under the prod of lobbying dentists.

I cannot understand why a state board will always try to interpret a law in its most illiberal light. We have had some experience in Wisconsin, will probably have more in the future, and, down in Missouri, the board has just run up against a decision or rather a writ of mandamus. A dentist had been in actual practice for several years but was lately refused a license or examination on the grounds that the college from which he graduated was not reputable.

I regard it as a mistake to leave anything to the discretion of a State Board. Their duties and powers should be strictly defined, as they are but human and, as such, liable to err and be unconsciously biased as to the dental fitness of a candidate by their impression of him as they meet him. The determination of college reputability should be something apart from their duties.

Coming right down to a question of right and wrong, I cannot really see how it is the concern of an examining board where a candidate secured his education—whether in Chicago, Philadelphia, or even in Milwaukee, or in a dental office. Their whole province should be to see that he passes a satisfactory examination, and, in vulgar parlance, is there with the goods.

The value and safety of a dentist to the community and to his following, does not depend nearly as much on his theory as it does on a good sound comprehension of the mechanical reasons of dental operations, and the thereapeutics and treatment of diseased pulps and their sequelae. Any man who comprehends and uses a square base for his fillings, who follows out sulci, in young patients, to their extremities, who can remove a pulp with cocaine or with arsenic, and afterward properly fill the roots, who can manage a putrescent pulp case to a successful ending, who can properly grind and fit a Logan or a Davis crown, or make a comfortable banded crown, gold or porcelain, and who can make a well articulated denture, is a competent dentist to practice anywhere, and cannot do harm nor bring disgrace upon his profession and to tell such a man, when failing health of self or family, or any reason whatsoever, has made a change of location essential or desirable, that he must spend six months in study of quiz compends on anatomy, physiology, pathology, chemistry, etc., simply because his years of experience have driven most of his theory out of his brain, is unjust and not American. It is state rights used to an end never contemplated by the original designers of the Constitution.

To my mind, since the usual studies of the high school course (in the absence of a high school diploma) are the requirements, in these days, for entrance to a reputable dental college, in fact, must be regarded as part of a dental education, why would it not be quite as reasonable, and just as consistent, to examine an old practitioner in algebra, geometry, civil government, botany, and Latin or German, as to question him on the origin and insertion, nerve and blood supply, of some muscle of the fore-arm, or some obscure process or function in physiology, or some intricate chemical reaction, or the geneaology of some bacterium, in order to determine his fitness to practice dentistry in his own country.

Gloss it over as you will, with high sounding phrases about the necessity of protecting the people from charlatans, advertisers and incompetents (this danger is always from some one trying to get in, not from the ones already in practice), yet the fact remains that the animus behind most of these exclusive and prohibitive dental laws is the protection of the established dentists and the desire and intention to keep down the supply of competitors.

One dentist will agitate for stricter laws from a sincere and honest, even if mistaken, idea of raising the status of the profession in a state. Fifty others will fall into line because of less noble motives.

I am human and am ready to admit that, I would prefer, from a distinctly selfish standpoint, of dollars and cents, and the possibility of being extremely independent in the conduct of a dental practice and its easy retention, to be the only dentist in my city. I could go duck-shooting, deer-hunting or trout-fishing without fear of losing a patient.

Selfish, and seemingly frivolous as the foregoing statement sounds, it is different only in degree from the act of keeping out some elderly dentist who may desire to locate in my state, but is unable to pass the examination in non-essential theory that the law is supposed to require, and for which law you and I are partially responsible because we give it our tacit sanction by not urging, at every opportunity, its removal on the grounds that it discriminates against the man who in proportion as he has increased in mechanical ability, in an inverse ratio has decreased in theoretical knowledge and also the power to acquire and retain the same. It is inhuman, and as narrow as it is inconsistent, to permit a law or condition to exist that practically deprives a man of the privilege of earning a living in one state, while accepting him as a reputable practitioner in another?

I think that there should be some active working board of a few members appointed, whose duty would be to control the curriculi of every college in this country, to the end that no unworthy person be admitted and to the further end that no incompetent one be graduated. This arrangement would mean that a diploma from one would be as a diploma from another, neither an evidence of an extremely long and stringent course, nor of an easy and slip-shod college career. Such a diploma, under the conditions I have outlined, should and probably would be accepted by every state as indisputable evidence of absolute qualification for the practice of dentistry in any state, upon presentation and verification of identity.

I believe that such control, as outlined above, can never be exercised, owing to the widely divergent interests, as represented in the various college ownerships and management, so it is certainly necessary for states to establish barriers in the form of impartial examinations. If a young graduate, fresh from his studies and the routine and habit of writing and memorizing, cannot pass a strict examination, he probably deserves no pity, or sympathy. However, I believe it is the college that rather deserves censure, where a new graduate is plucked by a State Board. Something in his education has been neglected.

But a student once graduated, and examined at the hands of an impartial State Board, I say that he should never again, in these United States of America, be subjected to the ordeal of another examination.

You have listened, this afternoon, to eminent men,—you will listen to and see clinics from more before the close of this meeting, and yet, think of it, and consider it in all its phases: Any and all of these dentists who have come here to instruct us from their specialized knowledge and skill, and whom we must feel have honored us by their presence, if desirous of practicing—for money—in this state, would be compelled to undergo an examination to determine their fitness and qualifications. The same condition would be met with, in their case (or in ours) in going to any other state in which they were unlicensed.

Possibly, as I have seen intimated, the state boards might be lenient with them because of their standing in the profession. If so, it is simply an aggravation of an already bad condition, by giving one or a few a privilege not extended to all practitioners of from three to five years' reputable practice in a state. Simply because one man's ability and industry and ambition along special lines, have thrust him into the limelight of professional publicity, does not make him any more reputable than his lesser brother who may have been content to blush unseen in some small city—simply doing good and conscientious work and following the paths laid out by his more ambitious brothers.

It would seem a perfect analogue to the condition as established in Dunn and Bradstreet's credit rating. One man is quoted as A1 credit for $25,000.00. Another man is quoted as A1 credit for $500,000.00.

Just a Difference in Capital, That's All.—The dentist with the big capital invested in study, persistent application, acquired skill (or in some cases, consummate nerve, and a swell office), cannot afford to work for the class of patients that compose the clientele of the small capital dentist. Yet the cheaper man may be conferring good service upon just as many or more patients than the big fellow, and, as an all-around dentist, may be his superior, and for a state board to discriminate against him, and in favor of the larger and better known practitioner, is, if practiced, a gross wrong.

Dr. Wedelstaedt has improved himself and become a crank along the lines of real practical dentistry and has fitted himself to give better service to patients and proven and accepted teaching to others less informed about cavity preparation; yet, and I do not know one way or another, I'll venture to say that I could, on the minute, pass as severe an examination in physiology as he, and that means that, given impartial treatment, both of us would fail, while a new graduate of ability and from a good college would pass.

Gentlemen, the conditions are wrong—radically so—when a discount is placed on practical experience and a premium on mere theory. I present this as a dogmatic statement admissible of no argument. If a man must be without one or the other, and follow dentistry, let theory go to the dogs and, in its place, cultivate sound mechanical principles in operative and prosthetic dentistry. The public will be better served.

To end this paper, I will state as my firm belief that state boards should be appointed, or rather elected, by the dentists of a state and not appointed by governors. It might not be a bad plan either, as Dr. Ottolengui suggests, in *Items of Interest,* to ask them to pass an examination in order to determine their fitness to determine other people's fitness.

I expect much adverse criticism of some of the ideas as presented in this paper. I myself regard the imperfect way in which the ideas are assembled for your consideration as the only weak part of the whole.

The importance of the subject of license exchange between states is such that the very best man in the state should have been selected to treat upon this topic, and any man, whatever his standing, should deem it an honor to do something toward equalizing the standing of dentists in the various states. Please don't feel satisfied that you will never need a change of location. It may pinch you as it has others.

Now, I do not want to be understood as having any particular state board or member thereof in mind. I am only criticizing what I believe to be wrong methods and bad conditions. If you gentlemen, members of the Wisconsin State Dental Society, are entirely satisfied with these conditions and want them continued or, as I do, want to seem them changed it is up to you. A concerted action by this society can make the Stockton resolution an assured fact in one year, as far as Wisconsin is concerned, and let us hope that shame or possibly an eleventh-hour repentance may bring others into the fold.

MODERN TREATMENT OF EMPYEMA OF THE ANTRUM OF HIGHMORE.*

BY HERMAN STOLTE, M. D., MILWAUKEE, WIS.

It would be difficult for me to adequately express my keen appreciation of the honor your council has conferred on me when they asked me to address you today upon the subject of modern treatment of antral suppuration. The task is the more difficult as others of greater repute have covered similar ground before with thoroughness. The last word has not been said upon the subject. Science and experience are progressive and methods of diagnosis and modes of treatment which have seemed sufficient up to a few years ago are nowadays not acknowledged as up-to-date. They had their day and cease to be. As late as 1885 the theory of the dental origin of antral empyema was the ruling one and there was only the routine treatment by Cooper's Meibom-Spicer's) operation through the alveolar route. Since that time, together with the development of knowledge in nasal, especially sinus, pathology and nasal surgery, conditions have changed altogether. The antrum has become a kind of buffer territory, separating the domain of the nasal surgeon on one hand and that of the dental surgeon on the other. But when we consider the situation justly you will agree that the nasal surgeon is working in his own territory, because the antral cavity is an accessory sinus to the nose, and not of the mouth or teeth. Causative dental factors of antral disease obliged him constantly to work together in cordial comradeship with his dental colleague in this sphere of his work. On the other hand the dentist and dental surgeon, provided they earnestly endeavor to act in the interest of their patient, have to consult in a reciprocal way the nasal surgeon, because the latest and most extensive investigations and statistics in antral diseases show that they are produced in about sixty-four per cent by causative nasal factors. Thus we have arrived at the question of the etiology of antral empyemata and I hold the discussion of this question before we enter into the different methods of treatment the more important. In spite of frequent publications on this subject since 1885, the greater part of the dental profession, due to the fact that good things need time, are still adhering to the now obsolete theory of the dental origin of the antral empyemata as the only possible one and the routine treatment of all antral empyemata by the alveolar route. As we all follow the same ideal purposes in our profession, to do the best and most scientific work for the patients who come into our care full of confidence in our skill and earnest work, you all will agree that discussions such as today are very apt to clear the views on these contested points and bring us both nearer to the truth. As I mentioned before, as late as 1885 it was the common view that antral diseases were due to a diseased root of a tooth. Since that time innumerable monographs have been published, the one favoring more the dental origin, the other more the nasal origin of the disease. The adherents of the dental origin usually bring forth the fact that in nearly all cases of antrum empyema they have found carious teeeth, as did Tilley (London) in his monograph on this subject in 1903. But this is a wrong conclusion. In the continental countries dentistry has not advanced to that degree of perfection as in America, and especially the average people in the continent do not consider it as a self-understood factor and justifiable pride to have faultless teeth as they do here. In fact, you will find in nearly all continental countries about eighty per cent of the people affected with carious teeth, and yet in our country, where are found owing to the excellent attention and care of the teeth on the part of the dental profession, the healthiest and soundest teeth in the world, we are just as often confronted with antral abscesses as abroad. Which proves that the mere coincidence of decayed teeth in antral disease cannot be used as an etiological factor. The most exhaustive records and statistics on this question have been collected by Strubel in 1904, whose research of all the literature of the world with regard to etiology of antrum empyema, has finally arrived at the conclusion, agreeing on this point with the anatomists Zuckerhandel, Dmochowski, Cryer and with men of eminent practical experience, such as Hajek Killian and Richards, that in about twenty-nine per cent of all cases the teeth are the etiological factors and in seventy-one per cent other factors are prevalent. While building up statistics we must be especially careful with the data the patient gives us. We cannot attribute an antrum empyema to a dental cause if the patient only mentions the occurrence of repeated toothache previous to his antral symptoms. As Zucherhandel, one of the greatest anatomists in the world, has brought forth, the entire tract of the tooth nerves is in direct relationship with the antrum covering, and in case of disease of the sinus the mucous membrane can be pressed or infected. When this occurs there would of course be pain, first referred to the teeth and supposed to be a toothache, especially if there should be a diseased tooth in close proximity. It is also possible that an abscess at the root may continue a long time without breaking through into the antrum. In such a case the mucous membrane itself can be pushed forward and the tooth may be extracted and the abscess wall opened without breaking into the antrum. Which anatomical point favors the dental genesis of the antrum disease? The first point is the anatomical fact that many tooth roots, especially those of the first and second molar, reach almost to the periosteum of the antrum and are separated from it by a very thin plate of bone, while in others even this plate is not present and the roots lie in direct contact with soft parts of the antrum. Caries of these teeth, therefore, easily communicate with the periosteum and lead to the formation of pus. Inflammation, therefore, can travel directly to the mucous membrane of the antrum even without a direct continuity between antrum lining and alveolar socket, or a direct infection from one diseased area to the other; there is a physiological possibility that the inflammation may travel from the antrum to the teeth and from the teeth to the antrum. This is based on the anatomical findings of Strubel (Dresden), who constituted the fact that the nourishment of the antrum and its periosteum, the spongy portion of the upper jaw and the teeth in the alveoli all come from one set of vessels, which anastomose with one another in the most extensive way. Which pathological changes of the teeth are commonly liable to bring about antral infection? This question arises when we are confronted with the existence of antrum empyema with indistinct history of previously diseased teeth and possibly findings of suspicious looking filled teeth. The patient perhaps showed evidence of antral empyema with distinct involvement of the nasal cavity, pus flowing from the middle and upper meatus. Several years ago, before the nasal discharge began, there was a history of toothache in some antral teeth, these teeth now showing the masterwork of dentistry. Can we, in such cases, attribute the cause of the antrum empyema to these formerly diseased teeth, and how are we to detect which of these teeth have been causative factors? Nobody is nowadays in doubt that chronic periostitis, pyorrhea alveolaris, alveolar abscess from root apex infection, exfoliation of the root socket will or may produce an antrum lining inflammation and consequently an empyema. The most common causative factor seems to be chronic periostitis, or chronic alveolar abscess in cases where the periosteum has become thickened and granular tissue has been formed near the apex of the root, a great tendency to absorption then taking place in that direction and by this absorption an opening into the antral cavity is produced, especially in cases where the socket passes directly into the antral cavity or is only covered with a very thin layer of bone tissue. This causes infection in perhaps 90 per cent of the cases. With regard to caries of the teeth, I suppose all dentists will agree that a pulpless tooth may be in all events an exciting cause, but the opinion of the dentists, so far as I am informed, disagrees in regard to the question whether a live pulp covered with a thick layer of dentine can produce an infection of the antrum. The general opinion is, that living exposed pulps cannot, as pulpless teeth, cause glandular enlargements and adenitis, but living although carious ones do not. But still, according to personal information by prominent dentists, the experience exists that a live tooth may possibly be associated with antral suppuration, the infection having occurred through the alveolar dental membrane which was attacked by pyorrhea alveolaris. There is also clinical confirmation of the fact that exposed live pulps may be included as possible causative factors, as periostitis is sometimes found in conjunction with inflammation of the pulp, the pulp itself being still alive. Thus the dentist has to determine if a tooth should be suspected as positive cause of antrum trouble. To the surgeon the teeth nicely filled and crowned may appear perfectly sound and harmless, but the dental surgeon after a careful examination of the teeth, together with their history, would be more liable to arrive at the true cause. Dental and nasal surgeons should, therefore, work together on these points. The decision whether pulpless teeth are a possible causative factor of antrum trouble may also be extremely difficult for the dentist when he meets with a number of pulpless teeth on the affected side. It is easy, perhaps, as I understand, in cases where there are some signs of alveolar periostitis about the roots of the pulpless teeth, as the tooth might be sensitive to percussion and pressure and thereby allow us to detect the responsible one. But in cases where none of the pulpless teeth show signs whatever of having inflammation about the roots I would be extremely interested and indebted if any of you would inform us how to find the tooth causing the infection except by performing the radical operation and ascertaining which of the teeth had exposed roots into the antrum.

---

* Read before the Wisconsin State Dental Society.

Following the statistics given by Strubel and others, there are in addition to the twenty-nine per cent of dental causes sixty-four per cent of antrum empyema of nasal origin, 32 traumatic and 32 luetic. What causes the high frequency of the infection by way of the nasal cavity? In order to understand this we must bear in mind that the antral cavity has its small outlet not on the floor, but high up towards the roof into the infundibulum of the nose. This well known deep cresentic furrow in the outer wall of the middle meatus of the nose, is in front and upward directly continuous to the naso frontal duct of the frontal sinus, so that pus flowing down from the frontal sinus through the frontal duct is forced to run down into the infundibulum. Owing to the anatomical structure of the complicated air passages (the lower, middle and upper meatus of the nose), the introitus of the nose having a much smaller orifice than the choanal or posterior openings to the pharynx and also smaller than the lumen of the nares, the effort of respiration draws much more air backward and downward than can readily pass through the anterior orifice, causing a partial vacuum in the nasal chambers. The air from the sinuses rushes out to correct this negative pressure. Per contra the current passes back into the sinuses during the act of expiration, when more air is forced into the nose than can in the same time rush through the narrow introitus. Thus the alternate condensation and rarefaction of the air in the nose causes a pumping action, which seems to explain how these accessory sinuses ventilating into the nose are able to keep their orifice free and their interiors clean. When by any infectious disease, maybe a common cold in the head, which is nothing more than a bacterial infection and inflammation of the nasal mucous membrane, or an infectious disease, such as influenza, typhoid or diphtheria, the inflammatory condition of the mucous membrane of the nose extends into the sinus cavities either by itself or the pathological and infectious secretions being forced into the sinuses by the common but absolutely damaging blowing of the nose, or the appliance of nasal douches. The frontal, the ethmoidal and the sphenoidal sinus will gradually in the above described way heal out, provided that there is no hindrance in their outlet. The antral cavity, however, with its unfavorably located orifice is especially liable to retain infectious material longer than the other cavities, thus forming by increase of the inflammation and by swelling of the opening, an abscess.

Supposing there are present, narrow and anatomical conditions of the nares such as deflected septum, swollen and hypertrophic turbinated bodies. In the case of any inflammatory condition in the nose the infectious process due to the narrowing of the air way is prone to become increased from the very beginning and after having once entered the sinuses, especially the antrum it will, due to the insufficient drainage and retention of the secretion, become chronic. This explains the fact that in the greater percentage of chronic sinus abscess the abscesses are found in the narrow side of the nose. It is indifferent which sinus is primarily affected. This depends upon the narrow conditions of their outlets or orifices. But the fact is undisputed that we very seldom meet a single affection of one sinus or the other; we are mostly confronted with multiple sinusitis. The antrum has decidedly the preponderance of being more frequently affected than all the other sinuses, due first to its unfavorable outlet on its highest point; secondly due to the already mentioned fact that the frontal duct is in nearly all cases directly continuous into the infundibulum. As there is in the middle of this groove a fold of mucous membrane extending upward and forming a pocket at the bottom of which is the antral foramen, it is evident that pus issuing from the frontal sinus duct downward to the infundibulum, or from the anterior ethmoidal cells may run directly into the antral foramen and produce an antral abscess without being itself primarily diseased. This point is of the greatest importance when we have to deal with treatment of an antral abscess, with a questionable dental history, but coexisting nasal catarrh due to empyema of the frontal sinus. It would be a total failure to undertake to cure the antrum abscess by means of the alveolar route even by the more extensive Kuester Dessault or buccal operation, because the frontal sinus would be constantly issuing its pus into the antrum, keep up the antrum empyema and all measures to cure it would fail unless we attack the real primary cause of the disease. Under the infectious disease, the influenza plays the most important part. We can say that nearly fifty per cent of all acute or chronic antral abscesses are originally due to this mischievous disease. I myself had the experience on my own antrum this spring. In addition to the infectious diseases as causative factors of an antrum empyema also intranasal procedures are likely to cause antral abscesses. For instance, firm tamponade of the nasal fossa after an operation: as septum operation, provided there was previously an infectious discharge of the mucous membrane, or the use of the galvana cautery, as the eschara, formed after its use, is especially liable to become septic and may, due to the following congestive reaction of the turbinates, be forced into the sinuses by blowing the nose. With regard to traumatism as an etiological factor, I cannot deny that dental operations sometimes cause infection of the sinus, as by forcing the root of the tooth into the sinus through fracture of the wall in an unfortunate effort to extract or in driving crowns or bridges upon the tooth or root, or drilling through the root into the sinus. Why has the antrum empyema such great tendency to become chronic or is so apt to infect gradually other sinuses? When for instance the diseased root has done its injurious work to the antrum, the periostitis or the alveolar abscess may heal, but the antrum empyema will be persistent as an independent disease increasing gradually in extent, the cavity becoming filled with granulation and polypi. As in chronic cases, the drainage through the natural opening is hampered by the deposit of fibrinous and cheesy clots from the stagnant pus, the solid putrifying masses blocking the outlet.

which they are unable to pass and adhering to the lining of the antrum, will change the nature of the pus; it will become fetid and aggravate the already highly pathological conditions inside of the antrum. Hypertrophic changes will take place and in some cases these are so considerable that the normally delicate mucous membrane undergoes enormous fibrous thickening which nearly fills the lumen of the antrum like a mass of flesh. In other cases, the interior of the cavity is found partly filled with masses of granulation tissue thickened mucous folds, collections of polypi and cystic degenerations—the interspaces or sulci and fissures being filled out with stagnated and putrified cheesy pus. Frequently the bone becomes affected, especially the floor and its septa, producing osteophytes or caries and necrosis involving the whole floor. In extensive necrosis of the walls or in case of ulcers of the lining mucous membrane, the suppuration may extend beyond the cavity to the orbit or the zygomatic fossa, and may produce brain abscesses and meningitis. In very rare instances the whole contents of the cavity of the superior maxillary bone undergoes a sarcomatous degeneration soon involving the inner wall of the nasal passages. On the other hand the fetid pus running continually through the antral foramen into the middle meatus of the nose produces edematous swelling of the mucous membrane of the infundibulum and adjacent parts and later polypous degeneration and proliferation. In that way the already narrowed nose passages will become more obstructed and the purulent discharge is gradually forced into all the other sinuses when the patient tries to free the nose passages from the molesting discharge by blowing.

From the aforesaid it will be evident: First, that a primary diseased antrum, whether by dental or nasal cause, is liable to involve in 50 per cent of cases the other sinuses; Second, that other sinus empyemata, especially frontal and anterior ethmoidal in most cases, are apt to involve the antrum which is also a reservoir for the pus from above; Third, that an antrum once affected, under unfavorable anatomical conditions of the middle meatus of the nose, the infundibulum being blocked by polypi or the whole side being anatomically narrow or showing greater pathological changes by affection of other sinuses, is liable to become chronically involved in the aforesaid way; Fourth, that in such chronic cases, with surgical measures by way of the nose, we are able to cure the disease entirely, while a single operation through alveolar route would fail. To illustrate all these facts I will give you the history of three cases out of a series of about one hundred and twenty cases of antrum empyemata. A man of forty-nine, seven years ago affected with alveolar abscess, pain and swelling in the cheek, then signs of antral abscess and the appearance of fetid catarrh in the nose passage, consequently the usual development of polypi with increased obstruction of the naris and subsequent affection of all the other sinuses. Owing to the enormous amount of pus constantly running from all sinuses, unable to be blown out of the nose due to the obstruction, thus running down the throat and producing pharyngitis and further by being constantly swallowed, producing chronic gastritis, anemia and entire breaking down of the system. During his long disease the patient at first had the diseased tooth pulled and was treated for a while through an alveolar puncture but only with small relief and with great annoyance, the pus flowing into his mouth. Later, he tried repeatedly to find relief for his severe headaches and nasal catarrh and obstruction, but the attending physicians gave him only temporary relief by pulling out some polypi due to the lack of recognizing the correct pathological conditions. After eight years of suffering, the patient came into my care and having constituted the existence of chronic multiple sinusitis with polypi and fetid pus, I found as supposed the cause an overlooked decayed first molar with a necrotic root, which was at once removed. On account of the very grave pathological changes in the antrum itself (deep dark shadows on transillumination, fetid contents and the involvement of all the other sinuses), I was forced from the start to abandon the idea to cure this case by the alveolar method and I, therefore, performed a very extensive radical operation, opening up the frontal sinus (Killan's method), then by way of the orbital plate the anterior ethmoidal cells; further, I made Luc Caldwell's antrum operation, finding in the antrum floor above the first and second molar a free bone sequester lying in the cavity. I then broke through the inner part of the roof of the antrum and entered the posterior ethmoidal cells and sphenoidal sinus. The patient was cured in eight weeks, did not show any visible scar and remained cured. In another instance a man thirty-five years old, who, it is most probable suffered as a boy of six an injury on his right upper jaw, which as we must suppose gave the not fully developed second bicuspid an altered direction, and in consequence, it grew and developed directly into the antrum. Later on the root became decayed and the tooth fell into the cavity, and produced as a decayed foreign body a chronic antral suppuration with subsequent polypous degeneration, gradually involving the infundibulum, as the nasal passage on this side was extremely narrow, caused by deflected septum, also involved all other sinuses except the frontal sinus. For years trials were made by specialists and general practitioners to cure the "fetid catarrh" of the nose by extracting the polypi. The polypi, of course, quickly grew again, the fetid catarrh persisted and finally the antral cavity contents underwent a sarcomatous degeneration (angio-sarcoma), which involved the outer wall of the antrum, the antral cavity, the whole inner or nasal wall, the ethmoidal cells, the sphenoidal sinus, the whole right nasal passage and finally also the pharynx. Two very extensive operations for removal of the sarcoma were performed by the essayist, and in spite of tremendous hemorrhage, which necessitated the subcutaneous infusion of four pints of normal salt solution, the patient was perfectly cured and remained so after two years' observation. In a third case a lady had been complaining since twenty-two years about catarrh of a fetid character in both nares, occurring after a bad attack of grip. In the course of the first year of her disease, she suffered much from toothache, due to involvement of the antrum and, although, apparently healthy, the teeth of one side were all gradually extracted to cure her inveterate neuralgia. Nobody thought of the possibility to look for the cause inside the antrum or the other sinuses, although the nose was totally obstructed by polypi. Twelve years ago, Dr. Senn operated upon her removing the left turbinated body and the polypi. But as the disease was caused by empyemata of all the sinuses on both sides, she had only slight relief. After that she was operated on several times for polypi, gaining a little relief by improvement of the air passage, but the fetid catarrh persisted in an extensive way. Finally after twenty-two years of suffering, she came under my care. I cured her within three weeks by a radical right frontal sinus operation (from outward), and radical antrum operation (Denker's method), attacking at the same time ethmoidal and sphenoidal cells. On the left side she was operated on by the intranasal route as the pathological changes were not so extensive. These instances show that in chronic cases even with clear dental origin we are not justified to attack the diseased area by way of the alveolar route, because the pathological changes in the antrum become so extensive that the disease nearly always involves the nasal sinuses to such an extent that a cure is only possible by the most extensive radical operation from the nose.

SYMPTOMS AND DIAGNOSIS.

Symptoms vary in a remarkable way, according to the extent of the disease. Finding great changes inside the antrum and nose, we are sometimes confronted with remarkably slight symptoms, and reverse with most troublesome and annoying symptoms in cases of slight pathological changes. In acute cases the complaints are, according to the pathological changes we constituted before, as possible causative factors of such abscesses: Throbbing pain in the cheek and in the supra-orbital region, flushed cheek, perhaps tenderness—upon pressure or percussion—of one or more teeth and in their immediate neighborhood, especially the region of the canine fossa, feeling of pressure in the cheek in bending down, sometimes swelling and tenderness of the soft tissues of the face and cheek; mostly fever and the associated symptoms. Relief comes when the abscess bursts into the nose, or is relieved by extraction of the inflamed tooth and, if necessary, perforation through the alveolar socket.

If consulted in such a case of probable antral abscess and you do not find a diseased tooth which (according to the pathological changes, we constituted before in our discussion, as possible causative factors of such abscess) may have caused the symptoms, but if you can trace a preliminary acute cold, or grippe and also purulent discharge from the nose, you may be sure the probable antrum disease has its origin from a nasal disease.

In chronic antral cases, you are only consulted when dental symptoms are prominent, these being possibly due to the irritation of the insufficiently protected infraorbital nerve within the antrum, and not to a diseased tooth; but you will find the array of the nasal symptoms, offensive discharge from the affected side of the nose, frequently recurring disagreeable sickly taste, increasing difficulty in breathing through the nose due to the formation of polypi, chronic nasal catarrh dropping down into the pharynx, occipital headache, brow-ache, feeling of weight over the forehead and around the eyes, impaired digestion, severe forms of gastritis due to continued swallowing of the pus, impaired general condition, lack of energy, pyschic depression, brought about by the absorption of the purulent material into the general circulation. Of course, patients with chronic antral abscess will appeal oftener to the rhinologist, but if you are consulted in such a case, due to some dental symptoms, or you find by chance, while working on the diseased tooth, the before-mentioned group of nasal and general symptoms, under such circumstances you may reasonably entertain a strong suspicion that the antrum is chronically diseased, either alone or in combination with other accessory sinuses.

DIAGNOSIS.

I will not discuss all the diagnostic methods found useful and necessary by the rhinologist who is acquainted with the difficult anatomical structure of the inner nose. I wish to emphasize only two points which may prove to be of great diagnostic value if you should suspect an antral abscess on account of the above-mentioned local and general symptom; for it would not be justifiable to sacrifice a healthy tooth or perforate an alveolus to make the diagnosis.

Let the patient blow his nose thoroughly on the affected side until no pus is expelled. Then let him stand erect with feet together, endeavor to touch his toes with tip of fingers without bending his knees, for from one to two minutes. Excessive aching of the diseased antrum and eventually of the diseased tooth will be induced, and a stream of pus will result from a renewed blowing of the nose. The rhinologist is convinced by the fact that he sees the pus streaming down from the middle part of the infundibulum over the upper surface of the middle or more posterior part of the lower turbinal.

Another fairly strong confirmation of your suspicion of chronic antral involvement will be secured by transillumination in an absolutely dark room. Place a ten volt electric lamp into the mouth (after removal of artificial teeth and plates). If there be pus in the antrum—and as in all chronic cases the antrum is filled with thickened mucous membrane, polypous and fibrous tissue—you will find invariably, a marked infraobital crescent shadow in contrast to the clear transillumination of the other side.

This refers only to cases of true sinusitis, that is: chronic inflammation and thickening of the mucous lining together with formation of pus and polypi. In simple empyema, where there is only a secondary abscess, for instance, due to a primary frontal sinus abscess, without pathological change of the lining, we have usually no shadow. To ascertain, if we have to deal with simple empyema or chronic sinusitis we apply Guisez's sign. If any obscurity that was present before, disappears after emptying the sinus of pus by means of washing the antrum through the puncture, we can suppose that we have to deal only with an empyema and not a true chronic sinusitis. If after applying one or more of these tests (shadow test), we can establish with reasonable certainty, that the case before us is a true sinusitis and that chronic polypoid changes have already taken place in the antrum and an immediate more radical method then a simple perforation of the alveolus, has to be resorted to. the absence of a shadow in transillumination, the absence of pus in the middle or lower meatus does not prove the absence of an antral empyema, we have to resort in a great many cases to the most certain and quickest means to demonstrate in all events the presence of pus in the antrum, that is the exploration of the antrum by puncture, either in absolutely clear acute cases of dental origin, by pulling the causal diseased tooth and perforating the antrum or in all other acute and chronic cases, by the elegantly and easily effected puncture within the nose, which is practically painless and does not require general anesthesia. This puncture test is absolutely reliable, and is done with a trocar in the outer nasal wall of the middle meatus (infundibulum), which is easily perforated being partly membraneous (Onodis' method) and free from periosteum. The trocar is so constructed, that, when it is withdrawn, on the remaining canula is fitted a rubber tube, through which warm salt solution can be injected, to wash out any contents of the cavity. This must sometimes be repeated in order to loosen the cheesy contents adherent to the walls. I gave up the older method to puncture through the facial wall with trocar or drill, as we cannot avoid in some cases infection of the periosteum and subsequent periostitis. The second step must be as we mentioned before to determine if we have to deal with a simple empyema primary or secondary due to frontal empyema, or with a chronic sinusitis with degeneration of the lining; thirdly, whether there is a combined empyema with present involvement of other sinuses of the nose, or whether there are other pathological conditions in the nose as ozæna, deflected septum, hypertrophic turbinated bodies. All these conditions must be corrected before we attack the antrum.

TREATMENT.

The treatment of acute antral suppuration is simple. The painful symptoms rapidly disappear if free drainage be secured, either through a tooth-socket in the alveolus or through a large opening of the antral wall of the nares either in the inferior (anterior part) or the middle meatus (middle part). If anatomically possible, one can also try to syringe the antrum through the natural opening in the infundibulum; but success in this mode is attained in only about 25 per cent of the cases. The opening in the inner or nasal wall of the antrum made by the trocar must be large enough to insert a curved metal tube. After having syringed the cavity thoroughly with normal salt solution or some mild antiseptic solution—as, especially, formalin 1:3000—it is necessary to Politzerize the antrum vigorously, again irrigate, and again dry it by the Politzer bag. Iodoform or boric acid powder may then be insufflated. By this method, it is safe to say, any pus in the antrum will be secured. It is important to note that at the time of the operation, or at any time during the after-treatment, although the antrum may be foun dry at the first Politzerization, it is not wise to consider it so, for small masses of pus, which are sources of infection and which must be removed, are often adherent to the walls. To overlook this fact renders the operator likely to consider the antrum healthy. A second irrigation and Politzerization are necessary to dislodge such masses. With the dry treatment, we usually obtain best results. Should this fail, two or three injections of saturated boracic acid alcohol of 50 per cent into the cavity will effect a rapid cure. This is also the treatment for chronic uncombined or uncomplicated cases, which we have to deal with later on. The alveolar method in acute cases is to be resorted to and leads to quick results only, if we find the cause of the acute empyema to be in fact a diseased tooth, and if we can exclude all possible nasal causative factors. Hence, also in supposed clear alveolar cases, the dentist should appeal to the rhinologist to exclude diseases of the nose; for the empyema may apparently be caused by a seemingly diseased tooth (acute symptoms) while in fact it has already been caused by chronic nose disease. In such a case drilling through the alveolus would not cure the disease.

In resorting to the alveolar method, it is well to make the opening so large that we are able to insert a tube for several days, in order to facilitate the drainage and the washing of the antrum, and to keep it from closing too quickly. The tube should, as a general rule, not project more than a quarter of an inch above the level of the floor of the antrum.

Should we have a nasal etiology for the acute empyema, or any nasal complications in a case where a tooth seems to be the active etiological factor, we can only hope to cure the empyema by establishing the free nasal respiration and by correcting any pathological condition that may exist. To pathological conditions in the nose belong especially hypertrophies of the turbinals, adenoids, or the remnants of them, and polypi formation and septum deflections. All these conditions act as sources of infection and re-infection. They become a continual feeder of infectious material which may find its way into any of the accessory sinuses and set up any empyema essentially chronic from the start. They act also as a preventive of free nasal respiration, and this latter is a *conditio sine qua non* in the successful intranasal treatment of antral empyema, acute or chronic.

CHRONIC EMPYEMA.

If we have to deal with chronic empyema the first question to be decided is: Have we before us a simple empyema, or a combined or complicated empyema? This question the rhinologist only can decide. He has to establish the fact of the absence of fibrous or polypous degeneration of the mucous membrane lining of the antrum, the absence of necrosis of bone in the antrum, the absence of polypous involvement of the upper membraneous part of the inner wall, especially the region of the infundibulum and its adjacent parts (middle turbinal), the absence of involvement of other sinuses—frontal, ethmoidal, and sphenoidal. If none of these factors are present we have a simple chronic empyema.

Then arises the question: Is this caused by a diseased tooth? If it be answered in the affirmative, and supposing all other etiological factors and pathological conditions and complications are absent, the alveolar method of curing an antral empyema is the correct one, as then only will it yield good results.

Yet in this small number of cases some objections can be raised against the alveolar puncture. The trauma caused by forcing the drill through the alveolus may be sufficient to cause enough irritation to materially prolong the duration of the disease. From a surgical standpoint the communication with the mouth is in all cases to be deprecated, and the first step in conservative treatment should be to close such an opening. The strongest argument that can be urged in favor of this method is that it affords free egress of fluid pus already in the antrum; but the fact that it does not afford drainage even from the most dependent part of the antral floor is sufficient, as Richards has emphasized, to show that it does not perfectly fulfill even that duty. Then too, pus in the antrum is not always fluid. Many times it is very tenacious, stringy, and may lie fastened so firmly to the walls or roof that it is removed with difficulty, even with forceps. The after-treatment generally employed is judicious irrigation, or the dry method is followed, in order to maintain the lumen of the opening of sufficient size, either by a tube or by a wick of gauze. The upper end of the wick, although perhaps the antrum itself may be dry, is always soaked with infected secretion very soon after its insertion, and the patient is forced for a long period to take his food flavored in a sauce of iodoform and pus, as Luc has it expressed.

To keep the hole from closing a gold or rubber tube obturator has to be worn constantly. They are certainly better than a gauze wick, but owing to the irritation and pressure upon the antral floor opening, granulations will sprout about the end of the tube and become liable to block the opening of the tube, or to form by its proliferation around the tube a wall of granulations which favors the formation of recesses, with opportunity for the secretion to stagnate and re-infect the cavity. Drainage through its easily obstructed bore is so imperfect as to be largely illusory, and the patient has to supplement it with frequent irrigations, which are only successful if the natural opening in the nose be free enough to act as a counter-drain. In spite of daily washings wth antiseptic lotions, however, the discharge is apt to remain putrid, to the disgust and injury of the patient. All these annoyances make him dissatisfied with the mere palliation of his condition.

The alveolar method therefore is a failure in nearly all chronic cases due to three reasons:

1. The operator has no control of the healing process, as he does not obtain a view into the cavity nor is he able to reach or remove the pathological outgrowths of granulation in corners and angles. He is absolutely unaware what is going on in the dark sphere of his work, the difficulty increasing with the increasing narrowness of the alveolar opening.

2. Even if he will produce obliteration by packing the cavity daily, he is unable to have the cavity equally and totally filled out, due to the same lack of control. He cannot prevent blind sacs or recesses from forming which prevent a healing.

3. As the operator, being a dentist, is unable to correct other pathological conditions of the nose, especially other sinus empyemata,

his work in the antrum must be in vain, as the nose pus continues to reinfect the antrum.

From the foregoing, it is evident that we are able only in a very small number of chronic cases—of course, only in cases without complications, to perform a cure in a relatively short time by the alveolar method. Which methods, then, are at our disposal for curing quickly and with lasting results simple empyema of the antrum? As decidedly superior to the alveolar method we have at our disposal the intranasal methods.

Before touching upon these conservative intranasal operations, I wish to emphasize one point. In advance of performing any of these operations the dentist has removed and cleared up supposed causative factors of the teeth. The rhinologist has established free nasal respiration and corrected any pathological condition that may exist—implying removal of suppuration adenoids or remainders of removed ones; removal of all hypertrophied parts of lower or middle turbinals, cure of co-existing empyemata of the sinuses (ethmoidal cells, sphenoidal and frontal sinuses). This is a *conditio sine qua non.* Otherwise our work on the antrum of Highmore would be in vain. This absolutely necessary requirement refers also to the treatment of the chronic complicated antral empyemata when we have to resort to radical operations.

It is immaterial to us whether we perform the necessary operation on the other sinuses in a prior operation or in the same sitting or anesthesia.

CONSERVATIVE INTRANASAL METHODS.

1. The easiest intranasal method is Onodi's operation, which we have referred to. We perforate with a specially constructed trocar the upper or membraneous part of the nasal wall in the middle meatus, and enlarge this opening with cutting forceps large enough for the patient to insert easily, a tube into the cavity, from one quarter to one-half an inch in length. The requisite condition is that the nasal passages are not extremely narrow from deflected septum. This operation requires only local anesthesia, inflicts but a trifling injury, and leaves the nasal interior practically intact. Many chronic antral cases are curable by this method in a very short time (ten days).

2. For chronic cases of more severe character, where the suppuration is marked with much foul discharge, or where the long

duration of the diseae and the polypous proliferation of the infundibulum and the infraobital shadow in transillumination leads to a suspicion of marked degeneration of the mucous lining of the antrum, the intranasal removal of nearly the entire anterior part of the nasal wall is indicated. The operation is advocated by Rhéti (Vienna) and Claoué (Lyons). After having extracted the diseased teeth or roots as possible causal factors of the abscess of antrum, and having established normal nasal respiration, we remove the anterior two-thirds of the lower turbinal and perforate the outer wall of the lower meatus by a straight trephine driven by a motor as far forward as possible against the outer wall of the nasal cavity. A second and third core is then trephined out in the same manner, and then nearly all of the anterior two-thirds of the nasal wall of the antrum is cut away by a long barrel-shaped straight bur (advised by Freer), followed by the use of Rhodes large punch-forceps to do the rest. The window extends from about three-fourths of an inch behind the apertura pyriformis, in front, nearly as far back as the perpendicular plate of the palate bone behind. Below, the opening is made level with the floor of the meatus, so that no ledge remains between the nasal cavity and the sinus. In this way we have a fairly good view of the cavity, and can palpate it with the little finger. With Rhodes' punch-forceps and bent, sharp ring curettes, the whole diseased contents of the cavity are evacuated; then it is packed through the nose for two days with strips of gauze saturated with subnitrate of bismuth, as advised by Freer. After that the irrigation begins, with normal salt solution interrupted now and then by the appliance of a two per cent solution of silver nitrate. The healing is complete in from one to three months.

This operation may be performed with cocaine adrenalin, and through the facial wall. We can guarantee that nearly 90 per cent with much less traumatism that the radical external operations of chronic antral empyemata are curable by this method. The only drawback to this operation is that it does not give such an excellent free view of all conditions within the antrum as the greater external operations—which latter therefore correspond more with surgical principles. In cases of extreme narrowness of the affected nasal passage, at all events, one has to resort to the external operation, to which I will refer later.

The history of a patient for illustration. Patient, female, came to me about eight months ago, due to an influenza attack with acute purulent discharge in the nose. After a few days symptoms of left antrum empyema developed. Pressure over the left cheek, throbbing pain increasing by bending down the head, high fever and abundant purulent discharge in the nose, dropping down into the pharnyx. Pain in the second molar developed, which symptom induced the patient to consult a dentist. The dentist supposed there being an antrum empyema attributed the latter to the aching tooth, although it contained a good filling, and had no clear points, leading to a dental history of the empyema, especially no alveolar abscess or periostitis. The dentist, together with a general practitioner, after having extracted the tooth, perforated the alveolar process under an anesthetic and enlarged the hole to render a packing of the cavity possible. The patient had relief at once, but after six months treatment (consisting in daily washing and packing of the cavity) there was still a constant purulent discharge from the antrum. As soon as the packing was omitted for a day, pus accumulated in the cavity and issued through the alveolar opening. After the empyema had been in existence over eight months, without permanent relief, the case was sent to me. The evidence of polypi, filling out the infundibular region, the oedematous swelling of the middle turbinal made it clear that the antrum mucous membrane was in an advanced state of chronic degeneration and that the ethmoidal cells in the frontal were involved in the process, and that the attempt to cure the antrum empyema by the alveolar method was a failure from the very beginning. First, the pus issuing constantly from the other sinuses would prevent any cure; second, the small alveolar hole in the alveolar process could neither give a chance to control the entire cavity in order to prevent the outgrowth of granulation in the remote corners and angles, nor would, in case of an attempt to obliterate the cavity, the small opening prove sufficient to render this possible. Thus the intranasal methods were applied. The anterior part of the middle turbinal resected, the infundibular region cleared out, the ethmoidal cells curetted and the frontal duct enlarged, then, after the removal of the anterior part of the lower turbinal, the nasal antrum wall in its anterior and lower part resected, so that an opening of an inch in width on the floor of the lower meatus into the antrum resulted. By this permanent opening, the degenerated lining of the antrum was curetted, and by daily washings of the cavity, as pus could not gather according to the location of the drainage opening into the nose, the case was cured within four weeks. Packing was used for forty-eight hours only. Afterward the free ventilation and oxygenation of the lining produced a quick restoration of the normal physiological condition in the antrum. It is well to mention that the expensive radical operation could be done without a general anesthetic only by appliance of a local anesthetic as alypin, a non-poisoning substitute of cocaine.

RADICAL OPERATIONS THROUGH THE FACIAL WALL.

Indications are the same as for the Rheti-Claoué operation just described, and further, in cases with extreme narrowness of the nasal passage; and again, when there is evidence of necrosis of the bone in the sinus, and if other sinuses, especially the sphenoidal sinus and the posterior ethmoidal cells, are involved. We have to deal with two different kinds of operations which have not quite the same scientific value, the Luc-Caldwell operation and Denker's operation (combination of Luc, Boeninghaus and Kretschman), which latter involves a decided progress.

(1) Luc-Caldwell operation: Tamponade of posterior nares; removal of two anterior thirds of the lower turbinal; incision in the gingival labial groove from the cuspid to the third molar to the bone. Elevation and lifting upward of the periosteum to close proximity of infra-orbital foramen. Then removal of the outer facial wall to a size between a 25 and a 50-cent piece, in order to gain an absolutely free access to all corners and accessory sinuses, and to remove all septa and trabeculae which would interfere with the freest drainage. Removal of the whole diseased contents by curette and bone forceps. Then removal of the nasal wall from floor level to the ethmoidal cells, so that the antrum represents a wide excavation of the nasal fossa, floor and floor on the same level, without any ledge between. If necessary, there is removal of diseased ethmoidal cells and opening of the sphenoidal sinus according to Jansen's method and packing of the cavity for three days. Then review of the whole cavity; if necessary, removal of remainder of diseased tissue, especially in the anterior inner angle behind the apertura pyriformis. Closure of the mouth-wound by suture.

After treatment: Daily washings or irrigations of the cavity, from the nose by means of rubber tube or catheter, with normal solution; now and then cauterization with 5 per cent silver nitrate or 50 per cent argyrol solution. Perfect healing in one to three months.

The operation involves severe hemorrhage and represents a great deal of traumatism; therefore, it is to be resorted to only in severe cases. Luc-Caldwell's operation has not given in all cases, satisfactory and lasting results. This is due to four reasons:

1. In resecting the facial wall (Canine Fossa) of the antrum, according to Luc or Boeninghaus, it is with considerable difficulty that we are able to evacuate thoroughly all the diseased tissue from the anterior inner angle of the cavity, curetting through the hole made in the canine fossa. This portion of the antrum, owing to the deep alveolar grooves and their strongly projecting bony ridges being the seat of most extensive pathological changes (large masses of granulations, polypous tissue, necrotic bone), will produce an abundance of granulation tissue with suppuration, interfering with the normal course of the healing process.

2. The permanent opening in the lower external wall, which we are obliged to make in this operation, does not, as we all know, involve the more anterior portion of the nasal wall, owing to the difficulty in getting to these parts with our cutting instruments through the opening in the canine fossa. In the same manner, the most posterior part of the lateral wall of lower middle meatus, on which we preserve the attached posterior part of the lower turbinated body, is usually not removed. On its anterior border remains hanging or detached a portion of the mucous membrane lining of the more middle part of the wall, through which the permanent opening into the nose is broken. This flap, if not thoroughly removed, is apt to be turned inward by the tamponade and placed toward the posterior inner angle of the antrum, forming a kind of a blind sac, closing up this corner from the main cavity and causing a new source of suppuration. These remaining parts of the nasal wall of the antrum, anteriorly and posteriorly, projecting into the nares like a stage side wing, prevent during after treatment a free view of the antrum and control of the healing process, treatment consisting in the application of nitrate of silver to the new formation of granulation tissue, especially in the anterior and posterior inner angle, and also a thorough irrigation of the cavity. Hence, we work in vain against a constantly renewing and obstinate suppuration, which lengthens the duration of the after treatment and prepares the case for recurrence.

3. The floor of the antrum, especially in its anterior corner with its marked pathological changes, needs an especially thorough evacuation of all diseased parts (granulations, polypi, necrotic portions, etc.). Hence these parts showing uncovered bone after the operation, require a long time to be covered again with a healthy lining, and are therefore, during that time subject to suppuration.

4. The artificial opening to the nose, due to its location far back and due to the posterior part of the nasal wall, and the remainders of the mucous membrane wall attached to it, has a great tendency to grow smaller and smaller, and in time closes almost entirely, leaving a fistula which will certainly produce a recurrence in the same manner as in Luc-Ofston's frontal sinus operation. Several attempts have been made to improve Luc's method, and to overcome some of the difficulties in this operation. Boeninghaus advocated the formation of a mucous membrane flap out of the lower nasal wall, in order to cover the floor of the antrum, hence shortening the healing process. His method of obtaining this flap through the facial opening by first breaking down the bony internal wall from the mucous membrane, makes it extremely difficult to obtain the desirable unlacerated flap.

Dr. P. L. Friedrich (*Deutsche medicinische Wochenschrift*, 1904, No. 37) in order to overcome the difficulties in dealing with the ill-reputed anterior inner angle of the antrum, advocated the open method which consists in making a curved incision in the groove of the ala nasi and, from the middle of this incision, a perpendicular one running outward and downward, half an inch in length; then resection of the bony junction of the nasal and facial wall of the superior maxillary bone around the apertura pyriformis, outward, continuing into the canine fossa, posteriorly continuing to the anterior portion of the nasal wall; eventually, also resecting the anterior portion of the lower turbinate. After a careful suturing of the external wound, the author claims to have no visible scars or other facial disfigurements. The principal objections to this operation are the possibility of visible scars due to the liability of secondary infection, and the insufficient access to all parts of the cavity through the comparatively small opening.

Kretschman (*Muncher medicinische Wochenschrift,* 1905, No. 1) attached the anterior inner angle of the antrum by extending the gingival labial incision from the second molar to the frenulum labii superioris, adding two rectangular small incisions on either side and upward. He then exposed the facial antral wall, extending the incision to the apertura pyriformis, then detaching the mucous membrane of the nasal floor, and external nasal wall of the lower meatus. Beginning at the apertura pyriformis, he inserted a strip of gauze between the detached mucous membrane and the nasal wall. Then followed resection of that part of the nasal wall corresponding with the lower meatus, thereby preserving the most anterior portion. The formation of the flap out of the detached mucous membrane of the lower meatus, and placing this on the floor of the antrum and fixing it by means of a firm tampon inserted through the nose, completes the operation. Kretschman does not sacrifice the lower turbinate on account of its important physiological functions, and does not close the oral wound in order to facilitate the after treatment. Healing of the wound and restoration of the antral cavity to a healthy condition takes place in about six weeks. Kretschman profiting by Friedrich's experience, that no disfigurement will occur, even by sacrificing the bony boundary of the apertura pyriformis recommends, for the future operation, the complete removal even of this part.

One year later, Professor Denker of Erlangen (*Archiv. für Laryngologie u. Rhinologie,* Vol. XVII, No. 221 and following) put in practice this idea of Kretschman. His method, varying in several principal points from Kretschman's method, represents a combination of Boeninghaus', Luc's, Friedrich's and Kretschman's methods, uniting in one method all the conspicuously advantageous points of each, Mucous membrane incision is immediately below the gingival labial field, beginning from above the second molar, and extending to within one-fifth of an inch of the frenulum labii, then runinng one-third of an inch upward. The soft parts including the periosteum are then lifted upward, by means of an elevator, the skeleton thus being laid free, including the apertura pyriformis. The mucous membrane of the lower meatus (lateral wall and outer part of the floor) beginning on the very edge of the apertura pyriformis and extending back one and one-half inches, is then lifted by means of a bent, blunt elevator. A small strip of gauze is inserted between the mucous membrane and bony lateral nasal wall. The resection of facial wall is then carried out to such an extent that a perfectly free view of all parts of the cavity is secured, and digital exploration is possible. After thorough removal of the diseased lining and morbid contents of the antrum by curettement, especially along the floor excluding the healthy, simply thickened parts of the lining, the resection of the nasal wall of the antrum is carried out, beginning on the lower and lateral edge of the apertura pyriformis, in a backward direction, and by means of a chisel and bone forceps. If the pathologic changes in the antrum are very pronounced and the ethmoidal cells and sphenoidal sinus are also affected, the resection should be extended into the infundibulum, followed by curettement and opening of the affected sinuses. The lower turbinated body having been resected in its anterior two-thirds as a preliminary operation, especially when the same is strongly developed, special stress should be laid upon the fact that every particle of the bony ridge between the floor and the antrum and the lower meatus be chiseled or cut away, so that a perfectly smooth surface results. From the detached mucous membrane wall of the lower meatus, Denker forms a rectangular flap one and one-quarter inches long and one-half inch high (or higher, in case the bony wall has been removed up to the infundibulum). The flap starts just back of the ala nasi. It is then turned over into the antral cavity and fixed upon the perfectly denuded floor by inserting vioform gauze tampons through the nasal opening. The exact closure of the oral wound by suture finishes the operation. The packing is removed in four or five days through the nose without any pain or discomfort. This is followed by daily repeated washing of the cavity with normal salt solution, by means of a big catheter abruptly bent, or by means of a soft rubber bulb, the tip being inserted directly into the cavity.

The ease of the after treatment is the most striking feature in Denker's operation. The patient is practically independent of the physician after the packing has been removed, a point apt to be of some importance in dealing with out-of-town patients, or patients whose time is limited. There is no painful removal of the packing or daily removing of the latter, as the permanent opening is so large, that the patient himself can insert the tip of the rubber bulb into the cavity with the greatest ease, and is able to cleanse with the current of the solution every part of the cavity, as the floor of the lower meatus is continuous with the mucous membrane of the new-formed lining of the antral floor, thus representing one smooth surface devoid of any projections of bare bone; the pain during the after treatment, as in Luc's operation is excluded. Immediately closure of the oral wound, which is permanently healed after four or five days, is a great improvement over the open treatment of Kretschman; i. e., through the mouth cavity, with its danger of irritation and reinfection. Another great advantage of this operation, is that it gives us the large nasal opening far in front, so that we are able to inspect the posterior half of the cavity directly with the eye, the anterior one-half with a small rhinoscopical mirror, and thus to keep down every pathological growth of granulation of or polypous tissue. Any accumulation of pus behind the lateral part of the anterior nasal wall, or in the anterior inner angle of the cavity, is also excluded. Further, the large opening located well to the front renders the occurrence of a relapse impossible. In the Luc operation, we are sometimes confronted by the condition that the permanent nasal opening of the antrum, due to the unfavorable location being out of view, especially when the patient has not been able to come regularly for the after treatment, has nearly closed or become so narrowed that a thorough draining of this cavity, or even inspection is impossible. Owing to the impaired drainage, the suppuration becomes increased, the granulations within the cavity proliferate; and in a short time, we have to resort to a new operation for a cure of the recurrence, a fact which confronts us occasionally in Luc-Ogston's frontal sinus operation. These are depressing experiences; hence we ought to be only too glad to know of a method which renders these recurrences absolutely impossible.

One of the objections offered to Denker's operation is its magnitude. I must confess out of my own experience in three cases, that the simplicity of this operation in comparison with Luc's or Boeninghaus' is most surprising. In Luc's operation we all know how difficult it is to remove through the opening in the canine fossa so much from the lateral nasal wall, as should be; or in Boeninghaus' operation, how difficult it is to form an unlacerated complete mucous membrane flap of the nasal wall. All these steps are done with the greatest ease and much more quickly in Denker's operation. The hemorrhage is not greater than in Luc's operation. So far as the dread of possible subsequent disfigurement (falling in of the cheek) is concerned, I think nothing shows there is no disfigurement more than a glance at this photograph. The result has been the same in all my cases.

Gentlemen, perhaps it has occurred to you that, while enumerating the radical methods for the cure of antral empyema, I did not mention one method which is very much favored by dental or oral surgeons nowadays—the Dessault-Küster operation. This consists in the removal of a smaller or greater part of the facial or buccal wall through the gingival labial fold, and in tamponading the cavity for months (five to twelve) in order to obliterate the cavity or to heal the cavity, preserving the big mouth opening and closing it by obturator. This operation fifteen years ago was exclusively the radical operation for antral empyema; but as we have arrived at better methods, the nasal surgeons have given it up absolutely. How can we expect to cure a chronic antral empyema by this operation, which leaves intact the upper inner wall of the antrum, the region of the infundibulum, which is so often the seat of extreme pathological changes?—this wall through which, by means of the natural opening of the antrum, the infectious pus from complicating nasal empyema constantly issues into the cavity which we intend to fill out with granulation tissue; an operation which absolutely neglects to draw into the sphere of our surgical intervention the treatment of the other sinuses (frontal, posterior, ethmoidal and sphenoidal sinus)—a fact which stamps this operation as absolutely insufficient.

3. By performing this operation we sin against one of the chief principles of surgery, bringing the diseased area which we wish to cure in a free communication with the most infectious cavity, the month—a fact which continually reopens new ways of infection and retards the quick healing process, by keeping up constant irritation in the wound cavity, providing new granulation.

4. This operation does not give a free view into the most anterior inner angle of the cavity, from which relapses so often arise.

5. The operation requires a very tedious and complicated after treatment, five to ten months or longer, which is a great annoyance to the patient, who is forced, as Luc has expressed it, to take his food for many months or a year in a sauce of iodoform and pus.

6. The hole created in the facial wall has a great tendency to close up and become too small, therefore, the operator is soon confronted with the fact that he must either insert a hard rubber or silver obturator to maintain a permanent opening or allow the wound to close. In the one case he forces the patient to wear a foreign body in his mouth for the rest of his life, while if he adopts the other measure of obliterating the cavity, he may reasonably expect a recurrence. A careful control is impossible, and recurrences

must frequently occur. We cannot, therefore, consider this operation as a radical one and cannot recommend it, although I don't deny that we may cure a chronic antrum empyema by this operation, in case the antrum is alone diseased and other nasal sinuses are not involved. But we prefer methods which are safer and lead quicker to a permanent cure.

CONCLUSION.

1. Antral empyemata are due to dental disease only in 29 per cent; the chief etiological factor (64.6 per cent) being infection from the nasal passage.

2. In all cases of acute or chronic antral empyema, also with cases of clear dental etiology, it is the duty of the dentist to require the diagnostic help of the rhinologist and to secure the investigation of possible nasal etiological factors or nasal complications. Without determining this, the dentist runs the risk of never curing uncombined antral empyema.

3. In acute antral empyema, with proved dental etiology, the alveolar method is justified as the best surgical interference.

4. One is never justified in extracting a healthy, or even a decayed tooth with a living pulp, without co-existing alveolar abscess or pyorrhea alveolaris, for diagnostic purposes only.

5. For all cases without alveolar abscess, etc., the most elegant and painless method in puncturing the antrum is Onodi's method through the middle meatus, which has to be followed by syringing.

6. About 69 per cent of chronic antral empyema are combined or complicated; that is, the antral cavity has undergone chronic changes by polypous and fibrous degeneration of the periosteal lining, with the formation of cysts; one or more of the nasal sinuses are involved, either by way of the antral abscess or as a preliminary disease, the antral empyema being only the secondary disease.

7. Hence, we can scarcely expect a cure in chronic cases by the alveolar method. A cure in chronic antral empyema by means of the alveolar method is only possible in not too chronic, quite uncomplicated cases, without chronic polypous and fibrous changes of the periosteal lining, without necrosis of the floor, without involvement of the nasal sinus and other pathological conditions in the nares.

8. Superior to the alveolar method in chronic cases, with or without dental origin of the empyema, are in all events the intranasal methods. First, Onodi's for slight chronic cases without de-

generation of the lining; Rheti and Claoué's method (for more complicated cases intranasal removal of the anterior part of the inner wall of the antrum), assuming that there is a wide enough nasal passage for the employment of this method.

9. For very narrow nasal passages (deflected septum) on the affected side, and in complicated cases, especially in involvement of the posterior ethmoidal cells and sphenoidal sinus, necrosis of the floor and total degeneration of the antral cavity, the radical operation of Luc-Caldwell, and—best of all methods—Denker's operation, are the only ones which give a guarantee for quick and lasting cure. With regard to thoroughness, easy and painless after-treatment, quick and perfect cure, and lack of recurrences, Denker's method is far superior to all others.

10. Küster-Dessault's method (removal of the greater part of the facial wall only) is not a radical operation, because it neglects the nasal wall and co-existing nasal sinus suppuration, does not harmonize with modern principles of surgery, and involves a very tedious and annoying after-treatment (five to ten months) without the guarantee of lasting cure, many times succeeded by the necessity to wear a foreign body (obturator) in the mouth for life-time.

11. Each individual case must be worked out for itself, and it is in the working out of the individual case, that I think the co-operation of the rhinologist and the dental surgeon is required. The dentist must not lose sight of the fact, that many cases of empyema are of extra dental origin ,the rhinologist must not lose sight of the fact, that notable cases of empyema are of nasal origin.

In conclusion, gentlemen, while thanking you for the kindly way in which you have listened to me, I regret that the exigencies of time have compelled me to treat in so cursory a manner this branch of surgery in which we are both interested. Such regret, however, is more than compensated by the feeling that whatever may be the outcome of this meeting, it will at least be the means of introducing a friendly discussion, and I hope promoting the good fellowship of the members of two branches of the surgical profession, who do not often sufficiently profit by an interchange of ideas, and in our united work let us not forget that the true success is to labor.

MISCONCEPTIONS CONCERNING PORCELAIN.

BY LOUIS LADEWICH, D. D. S., CHICAGO, ILL.

The first misconception relates to its strength. Porcelain is stronger than it gets credit for, though this misconception is natural in view of the experience the profession has had with it. Porcelain as generally used by the profession is no stronger than its reputation indicates, but porcelain properly manipulated is one of the most serviceable materials that can be used under its proper indications.

One of its chief functions is for use in jacket or shell crowns, where if judiciously employed it is capable of a wide range of usefulness. It may be made to restore a badly broken down incisor where inlays would be treacherous, and where ordinary crowning would call for destruction of the pulp and would introduce the problem of the pin in the canal with its manifest limitations as to danger of splitting the root or perforating it. It may be used as a means of bringing into alignment many cases of irregular anterior teeth without moving the roots by properly grinding the teeth and contouring the porcelain shells so as to line them up in regular order. I have had many cases of this kind of marked improvement without destroying any pulps. One of the misconceptions about porcelain for this class of work relates to the use of facings. Facings are contraindicated in building porcelain crowns. The moment a facing is ground to fit the case its shade is changed and its strength reduced which can never be restored. More artistic and stronger work may be done by building the entire crown from the mix made by the dentist himself.

And in making the mix another misconception occurs. It is fatal to the best results and the greatest density of porcelain to jar the body into place as is usually done. When a mass of wet porcelain is jarred it causes air bubbles to settle toward the bottom of the mass, and the more it is jarred the larger are the bubbles. This may be proved by placing porcelain on the end of a spatula and jarring it. Then examine it with a glass, and it will be found full of bubbles near the bottom of the mass. Porcelain should be gently pressed or wiped into place with a spatula, in such a manner as to constitute a burnishing of the porcelain. When built up in this way it is very dense and strong and there is little shrinkage in fusing it. I seldom find it necessary to fuse a jacket crown more than once, in any tooth anterior to a molar. I use the highest fusing body I can get, and have no need for more than our shades.

A frequent use I make of the jacket crown is to employ it as a means of carrying a missing tooth. Where a single tooth has been lost in the arch I grind one of the adjacent teeth and make a jacket crown for it. I then trephine the process where the tooth was lost and make a porcelain tooth—crown and root—to fit into the vacant space. The two are fused together with porcelain and adjusted to position—the jacket cemented and the attached tooth implanted. Some of these cases have been in the mouth for more than a year and are still doing good service.

In grinding natural teeth for jacket crowns I invariably keep them dry, directing a jet of compressed air immediately at the point where the stone or bur touches the tooth. By this means I am usually able to grind the most sensitive tooth with little discomfort. But there must be no hesitation or misdirected manipulation. The operator must know in advance precisely the form he wishes to give the tooth, and then go directly to that form. It should never take more than ten, or at most fifteen minutes, to grind down any tooth for a jacket crown. In truing up the walls and making a shoulder at the gingival margin I use sharp fissure burs. And they must be sharp. The moment a stone is not true or a bur is the least dull it is discarded. I have used as many as six burs in preparing a tooth for a crown.

The gauge of platinum used for the matrix is 1-1000 of an inch, and it is simply wrapped around the tooth and fitted without soldering. In this way it can be easily peeled from the inside of the crown after fusing. The platinum used should be fresh from the manufacturer and not subjected to the slightest manipulation previous to being adjusted to the tooth. I buy mine by the ounce to be assured that it is not handled by the dealer in any way. Platinum under these conditions is almost as adaptable and soft as tin foil, but it is quickly hardened and stiffened by manipulation.

The possibilities of porcelain in this work are well nigh unlimited, and if any of the statements herein made seem radical or unreasonable I can only add that they are capable of demonstration at any time. Porcelain inlays have been heralded throughout the world, but porcelain jacket crowns are capable of a far wider range of usefulness than inlays.

A CASE OF HEMORRHAGE.

BY C. H. OAKMAN, D. D. S., M. D., DETROIT, MICH.

Mr. J. G., aged 40 years, occupation saloon keeper. Had been affected with frequent hemorrhage from the gums which lasted several months, was confined to his bed about half of the time. He was always a hard drinker, and apparently could not refrain from it. His physician referred the case to me. The hemorrhage was not from the gums alone but apparently from most of the mucous tissue of the body. Bloody stools were frequent. He was of a very plethoric temperament, and had endocarditis, nephritis, and luetic taint. Had him come to the office and removed all calculi and other irritants from the teeth. Prescribed astringent mouth washes, chloride of zinc, tannic acid, alum and other astringents. Nightly for several weeks he would lose from one to six ounces of blood, and eventually became very weak. I applied suprarenal gland extract in powder form and secured a good result, which lasted twenty-four hours. Continued it the next day with fair success as far as hemorrhage was concerned. He had a bad reaction due to the high blood pressure, induced by the absorption of the suprarenal gland extract. Reduced the amount of powder but for steady use I had to seek something else. I came across an article written by a New York gynecologist citing an instance where, in a case of endometritis, he had used with success Thyroid Gland Ext. to control the hemorrhage. This prompted me to try Thyroid Ext. in this case. I gave him three tablets a day for three days, then four a day for four days, then reduced to three daily, occasionally two a day. Ten days after there was no sign of hemorrhage, and the patient continued to improve slowly. About eight days from arrest of hemorrhage he was able to go down town, although very weak. After his second visit down town, he was induced to take a few drinks of whisky and a few more; when he had to be brought home suffering from the effects of this indulgence. I called next day, found him in bed with renewed hemorrhage. I could not account for the change, when he had been doing so well. His wife quietly told me the circumstance. The hemorrhage was again controlled to some extent. In the course of a few days he was able to be out again, and made a few trips to business, but once more fell by the way side, which brought on hemorrhage. After a strong admonition not to use alcohol except it be prescribed, which I knew would not be likely, I concluded to stay by the case a little longer, although greatly annoyed by his actions. Several other escapades and I refused to treat him further. It was a question whether hemorrhage, nephritis with its attendant sclerosis, paresis or endocarditis, would be the most important factor in ending his sufferings. As I did not attend him toward the last, I am not familiar with the final condition. Death occurred four months later from a complication of the above diseases.

It seems to me that in cases of hemorrhagic diathesis it might be well to prescribe this preparation a week or so before operation is attempted, as it seems to increase the plasticity of the blood and in that way lessens hemorrhage.

ETHICS OR HONESTY IN THE PROFESSION.*

BY E. B. STRANGE, D. D. S., HILLSBORO, ILL.

If all members of our profession would try to do what is fair and right there would be no necessity to be continually discussing ethics. But since this is not true of all men, we are obliged to give vent to our feelings from time to time.

To discuss ethics we not only must think and refer to the relations of members to each other or upon the dignity that the profession assumes, but upon the importance of impressing the value of our services upon the public, and to the high esteem which is due us as members of the dental profession. A man who is fair and honest will treat his fellow practitioner with all the courtesy due him, as well as to our closely allied brother, the M. D.

We must be able to overlook many remarks of the laity that are so common; we must simply bear in mind that they are not of the profession, of which we are justly proud.

When a patient applies to us it is usually in this manner: "Doctor, I just want you to examine my teeth and do whatever you think necessary."

Now it becomes our duty to comply, and with every degree of honesty to ourselves and to the patient.

There is at least a strong temptation to see how large a bill can be made without due consideration of what is best for the patient in respect to both material and price.

---

*Read before the Central Illinois Dental Society.

When a person goes into a business house to make a purchase he or she usually has some knowledge of what is wanted and the price to be paid, but as a general thing patients come to us entirely unfamiliar with their actual needs and must trust entirely to our advice and skill. Therefore whatever is done by us should be with all the care and skill of which the operator is possessed.

If any contractor slights his work in the least he is rightly accused of being dishonest; then why not we also, if through indifference, haste, or any other motive, we perform an operation not up to the high standard of which we are capable?

When a patient comes to us with decay around the filling why tell them that their teeth are too soft to hold fillings? Why not do the work thoroughly in the first instance and avoid this form of failure? Do this because you owe it to the patient, to the profession and to yourself.

One thing I must refer to in connection with this subject; that is anterior gold crowns. A gold filling while usually justifiable is unsightly enough, then why resort to crowning a conspicuous tooth with gold? Should the case clearly indicate a crown, gold crowns are unnecessary.

Then, again, we must at all times consider the financial rating of our patients. Should the party be a laborer, with small compensation, it is not justifiable for us to involve expenditure that can be avoided, but do the work necessary with all the skill at your command, thus consulting the patient's interest, and you will have lived up to the high ideal of the strictly ethical and honest doctor of dental surgery.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, QUINCY, MAY 14-17, 1907.

DISCUSSION ON THE PAPER OF DR. BLACK.

In the absence of Dr. Truman W. Brophy, who was to have opened the discussion on this paper, Dr. C. N. Johnson, of Chicago, was asked to do so.

Dr. Johnson said:

The paper to which we have just listened is a most scholarly presentation of the status, past and present, of dental education in this country. I shall refer only to a few of the points raised which seem to me very significant.

In the first place, this subject should be frequently discussed in our State Society and not reserved entirely for the Faculties' and the Examiners' Associations. There is no other subject I know of that is today so vital for the future of the profession.

Young men should begin the study of dentistry at an early age, because in the practice of dentistry there is involved so much of finger-craft, and the higher development of that finger-craft cannot be gained if a young man has gone past a certain age before it is developed. For that reason we must get the young man at work early in life if we are going to make a good dentist of him. That does not, however, always hold true. If a man by nature is a mechanic, he will develop sufficient manipulative ability in dentistry if he does not begin to study it very young. But that is not true of the majority of young men who come to us. We have to develop that manipulative ability in them. The statement has been made that we cannot develop finger-craft. From my experience in teaching young men, and in watching them operate, I believe that if we take a young man early enough, we can develop finger-craft in him, but if we let him go a few years longer, no matter how much we educate his brain, we cannot develop that muscular ability of the fingers that is so much needed.

In considering the effect of increasing the number of dentists in the community, the question always comes up as to whether the profession is not becoming over-crowded. It must not be overlooked in that connection, that the higher the training we give the dentists that are going out, and the better service they give to the people, the more service there will be for them to perform. The aggregate amount of service that is done today by the dentists of this country (and the people are better served here than in any other country) is not at all in comparison with the service that should be done. It is a matter, then, of educating the people to appreciate the value of dental service.

I am in hearty accord with the essayist when he makes the statement that the education of the public shall come more particularly by personal contact of the dentist with the people than by any kind of public print exploitation that we may advance. There is no way of meeting the people and educating them along these lines equal to personal contact in the office. A dentist can enter a community to practice his profession properly, provided he is the right kind of man, and he can gain patronage without in any way interfering with the patronage which the dentist has who is already established there, provided the man who is there is competent himself. If he has bad habits, and gets drunk, the new man will take his place, and if the young man is a good practitioner, he will have a practice in a few years that is much larger probably than that of the man who came there originally. I have noted that frequently. I believe the increased number of dentists will be cared for in the natural development of the demand for dental service.

Some of the figures that have been given are very astonishing, and I do not like some of them. The present rate of increase in the profession would keep the ranks full if there were 85,600 men practicing dentistry in this country and in Canada; instead of which we have something like 38,000. Those figures seem appalling on the face of them. According to that, we would have a profession that would be immensely crowded in a very few years, and still if you stop to think of the particular period of about ten years, when dentists were accumulating more rapidly than any other time, I believe it to be a fact, as stated, that the dentists were as busy at the end of that time as they were before that influx began. If that is true, the future of the profession will take care of itself, provided one thing is done, and that one thing is very significant. If men are to have plenty of practice to do in the future, they must be competent. The day has gone by for the incompetent man in the profession of dentistry, and it therefore becomes the duty of every dental college and of every state examining board to carefully supervise the young men who are sent out before the public to practice dentistry; and in conclusion, I have this one plea to make, that the dental colleges and the boards of examiners shall work in harmony with each other, with the ultimate purpose of keeping out incompetent men; not only that, but the other purpose of encouraging competent men, so that our profession in the future will be more brilliant in attainment and possibly do the people even more good than we have done in the past.

Dr. H. W. McMillan:

Dr. Black has given us a very good paper. It is science applied to dental education. It analyzes past dental history and bases its propositions for the future upon the record of the past.

I believe in unity of effort to seek the truth and a combined determination to live in accord with it.

I will leave the discussion of the work of the National Association of Dental Faculties and of the National Board of Dental Examiners to those who are better acquainted with their workings, but before doing so, I wish to urge that any difference of opinion between these may be harmonized by considering facts and weighing the truth until dentistry reaches that high and scientific standard at which it aims.

I prefer to discuss that feature of the paper concerning the education of the public to employ dental services efficiently.

I thoroughly agree with Dr. Black that the best way to educate the public is at the chair in our regular work.

Show patients it is to their advantage financially to co-operate with you in the regular examination and care of their teeth, and the best way to "show" them is through their pocketbooks. Do not hesitate to put on the "tariff" when they impose extra burdens upon you through their neglect to do as you have instructed them to do. They will never learn that "a stitch in time saves nine" unless you impose the nine and this for their failure to come at regular intervals for examination.

First teach your patient the value of a natural tooth, doing this by the use of the typodont and models showing the loss of a tooth will make bridgework necessary. Also use the record of the gnathodynamometer tested upon natural teeth and upon artificial substitutes. To do this you yourself must know the comparison and strongly urge the saving of the natural teeth. Refuse to extract a tooth which by treatment will do better service than a bridge. Many will thank you in after years for saving such teeth, and condemn you if you yield to their whim and extract them. You know what is right and best and if it were wrong to extract for one of your own family it is wrong to do so for the public.

You might lose the patient? Why, certainly! but nine out of ten will see the wisdom of your advice and stay with you, while the one you lost is an *ethical* advertisement for you.

Until dentists themselves learn the true value of a natural tooth there is little hope for the public. Great attention is paid in these days to the prosthetic side of our profession, perhaps losing sight of the fact of the greater service rendered by the natural teeth. Children are permitted to have permanent teeth extracted through the ignorance, or neglect, or false economy of their parents, to require the services of the orthodontist and bridge-worker later on. Is this not equivalent folly to "locking the barn after the horse is stolen"?

We know how much co-operation of patients is necessary to the most efficient work for them and the problem of the dentist is: "What is the best means of convincing the *public* that it *is* to the mutual advantage of patient and operator to co-operate at frequent and regular intervals that the natural teeth may be saved and do better service than artificial substitutes?"

I believe the best way is to send your patient a reminder card or examination notice one year following the completion of the work and expect them to follow your instructions concerning the care of their teeth and co-operate with you by appearing for examination at the end of the year.

That many will not do so is to be expected, which can be accounted for in many ways: Several from motives of mistaken economy do not co-operate. This supposed economy leads them to neglect their teeth until special treatment is required *under* the fillings which usually is of greater expense to them than the filling itself. Many dread the pain but forget the fact that the longer they neglect their teeth the greater will be the burden of pain upon them. Many do not like to take the time to have their teeth examined, forgetting the fact that the longer they postpone their dental work the greater will be the time required in which it may be done properly. Many suppose artificial substitutes better than the natural but ignorantly so, for the gnathodynamometer proves the natural teeth to be vastly superior to the artificial.

Give your patients these facts:

1. Dental expense increases with neglect more rapidly than the interest on money.

2. The expense of dentistry is in proportion to the neglect of the patient.

3. The average pressure upon natural teeth is 150 pounds and only 25 pounds on plates.

4. Natural teeth are six times as serviceable as are artificial teeth.

5. With neglected teeth the greater part of the expense is *under* the fillings.

6. A good natural tooth though aching can be cured and do better service than a bridge.

7. Teeth may be deeply decayed and the patient not be aware of the cavities they contain.

8. Small fillings with strong surrounding walls save the teeth better than large fillings with frail surrounding walls.

9. Small fillings are less painful to insert than are the larger and deeper ones.

10. Small fillings take less time to insert than do the larger and deeper ones.

11. Dental expense is based in a measure upon the time reserved for the patient, therefore they should keep appointments promptly.

12. Decayed roots which cannot be crowned are injurious to the breath and health and should be extracted.

13. Health, beauty and comfort are dependent upon the proper care of the teeth.

14. If the natural teeth are put in good condition and attended to at frequent and regular intervals thereafter, they will render their owner many times over the service they have cost him.

Dr. J. N. Crouse, of Chicago:

I have been very much interested in the paper of Dr. Black, although it is of a character quite different from what I had expected. I think there are some errors in the figures given. The number of men who get out of practice after graduation is much larger than the figures given by Dr. Black. I am quite sure I am correct about that, as I have several different ways in which I can judge. That is one of the evils which will eventually remedy itself. But it has always seemed to me a great hardship for a young man to spend three years in a dental college, which does not fit him for anything else, and then to find himself incompetent.

I take the position that the practice of dentistry requires more varied ability than any other occupation in life. When you get that idea into your heads, you will take up things that you are neglecting now.

I have great admiration for the work the dental schools are trying to do with the equipments they have, and with the advantages they have, as compared with what I had. When I went to school the course was four months for two years. The equipment for teaching was very meager. There was only one demonstrator to instruct the whole class. Now, students have men of the greatest skill to show them every step in an operation. We did not have so many advantages when we attended dental college, consequently the men ought to be better today than they were then.

I have taken the position that the training of the hand ought to follow the training of the mind rather than go ahead of it. It is very essential to train the minds of students so that they will become logical thinkers.

Dr. Don M. Gallie, of Chicago:

I wish to commend the magnificent paper that has been presented. I am sure, it will set us all to thinking, and will induce us to go into the subject and find out where we are weak, and whether our standards are too high or not high enough.

The essayist has told us that he thinks the best results can be obtained if a student, who wishes to take up dentistry, enters a dental school at an early age, because it will enable him to develop finger-craft to greater advantage, if he has the temperament and the inclination to do so. The requirements of our dental colleges today are four years in a high school previous to entrance to a dental college. The finger-craft these boys get they get from dental education. When we stop to consider how many boys there are who go through high school, we find that the percentage is very small. According to some figures I have seen, only thirty per cent of boys ever go to high school, and only eleven per cent finish the four years. If we insist upon a four years' high school course as a preliminary education to entrance to a dental college, then we must select all of our students from that favored eleven per cent of the young men of the country. Should there not be some allowance made for the sixty or seventy per cent who never go to high school? Should there not be some credit given for the technical and practical education these men have received in rubbing up against the world, to make up for what they may lack in a knowledge of algebra, of higher English, the classics, and so on? That to me is an important phase of this subject. I am making a plea for the young men of today. Do not think, for a moment, that I believe in letting down the bars, so that every Tom, Dick and Harry can come in. Emphatically, no. Some of our brightest young men have poor parents, and they have got to work for four, six, eight, or even ten years before they can get sufficient money to put them through school; but the knowledge they acquire is more than equivalent for that knowledge which they lack in the classics or the branches that are taught in high schools. [Applause.]

This matter of higher education and of higher standards is wrong in some respects, and there should be some consideration shown such men as I have mentioned. The boy who has not had a four years' high school course, is brought before someone who is to judge of his fitness. If he is a political appointee, injustice may be done to many who have not had a high school education.

With reference to the question of overcrowding. There is more work for the average dentist today than there ever was before. When we stop to think of the enormous immigration and of the enormous increase in the population of this country, you and I need not be afraid of being crowded out. There is room for us all, provided we are able, willing and honest enough to do the work that Dr. Black shows it is our duty to perform.

We have students who have been with us three years. We know their frailties and shortcomings. We also know their good qualities; what they can do. We know how honest and how earnest they are to succeed. They have done their best, and are doing good work. Some allowance should be made for them, notwithstanding their command of English may not be good.

They may be a little shy on this or that, but they are capable of practicing dentistry, without doubt, and sometimes great injustice is done to men who cannot write good examination papers. As Dr. Kirk remarked in one of his editorials in the *Cosmos,* "An examination is an abominable thing." So it is. If our State Board Examiners would get in closer touch with the dental schools and learn something about the different candidates who are seeking licenses to go out and practice, the interests of the profession and the interests of the people would be far better served, instead of having men who know nothing about these candidates sitting in judgment as to what they can do.

Dr. E. H. Allen, of Freeport:

Dr. Gallie, with all of his eloquence, confuses me. We are told that there is a cry in our meetings for more scientific papers. That is true. I want to ask you, however, if a man has all the finger-craft in the world, and has not had anywhere near a high school education, how is he going to successfully conduct scientific research and get up a scientific paper? I am somewhat familiar with public school work. For the past three years I have been and am still a member of the Board of Education of Freeport, and also a member of the Teachers' Committtee, and I have an opportunity of forming some opinion of what work is done by the high schools. Any good high school today, in a city of fifteen or twenty thousand people, has a manual training department. The boys who have a natural trend toward finger-craft go into the manual training department, and there they do work that would surprise most of you. This work is carried along with the other educational studies. It requires a certain amount of mind training in order to grasp the possibilities in dental education, and it seems to me, Mr. President, that the requirements of a high school education are little enough. I wish I had received a college education. If I had, I think I might have been a far better dentist. Education in our public schools does not consist in what you stuff into the memory of the child, but it consists in training the mind so as to grasp things and their relations one to another. The same is true of dental education. The mind training fits one to start out and begin to learn something about dentistry.

Dr. C. R. E. Koch, of Chicago:

I feel exceedingly reluctant to say anything on this subject. I have sat at the feet of Gamaliel here (referring to Dr. Black) for nearly forty years, and for three years or more I have been imbibing the fruit of his ripened thought so strongly and so much of it, that I dislike very much to say anything that might seem like a disagreement. And yet there are some features connected with this paper that I must disagree with, particularly with reference to the statistics given. I am led to believe that possibly these figures may be stated in some other way and show us a different result. Certainly, the way they are given they present us with an exceedingly pessimistic view, whether we look upon them from the standpoint of dental practitioners, or dental educators, or of dental students who are to become the future practitioners. It would look as though the dental profession were full and there was not much room for any more. I honestly believe (and I am firm in that belief) that the contrary is the truth; that there are not enough competent dentists, to supply the market, and, after all, the economic question of supply and demand must govern in this respect the same as in other interests wherein human activities are involved.

Let us assume, roughly speaking, that there are forty thousand dentists in the United States and Canada. Dr. Black has based his calculations on ages varying from twenty-one to twenty-six, beginning some twenty-odd years back, and continuing up to date. Therefore, I think it would not be unfair to say the average age of the present profession is thirty-five years. What is the expectancy of life at thirty-five years? Statistics show that three out of every hundred dentists are expected to die within a year. Out of forty thousand dentists, we would expect twelve hundred to die. In addition to that, we have the fact that at least one per cent change their relations for some reason or other, and I believe Dr. Black's estimates were larger than that. With an additional annual demand of four hundred more, that would be sixteen hundred. We have not admitted or educated sixteen hundred a year for the last sixteen years. In addition to that, we have a million of new people added to our nation annually, to say nothing of Canada. If we divide a population of eighty millions by forty thousand, we get a dentist for every two thousand people. If we continue to take on a million of new people annually, we will need eighteen hundred dentists annually to keep up with the demand. Therefore, I see a very good outlook for the dental profession, and I have no fear that our dental schools with their larger output will glut the market with their services.

I did not expect to say anything more; but the remarks of Dr. Gallie are so astounding at this day and generation, that I really thought I could not trust my own ears, and I can only explain it on the ground that Dr. Gallie is not connected with that part of school administration which looks after the particular question of entrance requirements or of studentship.

I want to say, so far as the state of Illinois is concerned, the state examiner is not a political creature in any sense. He is absolutely honest, fearless, and incorruptible. He turned down twenty-five students last year because they did not have the necessary qualifications. Most of those who were turned down are continuing to qualify themselves, and it is to be hoped that later they will be received and become proper practitioners of dentistry. The fact is that that gentleman, although a teacher and connected with school work, gives credit for digital and manual training. He recognizes the fact that all education is not gotten out of schoolbooks, nor is it all gotten in schools, but a man has to show him what he knows. I feel encouraged. I feel that we in Illinois have no reason to fear anything but what we are on the right road of higher education, and when Dr. Gallie says to you that dentistry is merely a mechanical art, which he practically said, and that higher education and mind training are secondary conditions, he talks as he would have talked thirty years ago. I do not think that in this day, when there is a great demand for higher education by the people everywhere, and a higher preliminary education is demanded for students of pharmacy, of the law and of medicine, we ought to go back and say to the world we are no longer a profession, but we are a mechanical craft; that our demand is not education, but digital training. [Applause.] I concede (and I concede it with the greatest regret in the world) that we did not start in that way. I know that Abraham Lincoln had not the advantage of a high school education; but had it been necessary for Abraham Lincoln, before he could have been admitted to the bar, to have had a high school education, you can bet your bottom dollar he would have shown it. A requirement that is equivalent to a high school education is within the reach of every American youth who wishes to attain it. It simply requires a desire and a determination to obtain it. I concede that an argument of that kind coming from me may be said to be in very poor grace, because my early education was very sadly neglected. I had to dig everything out by the help of some friends and by burning the midnight oil. It has been a great regret to me, and I should not feel that I was doing my duty to the present and coming generation if I did not encourage them to enter our profession with a better preparation than I had. Why do we educate our children better than ourselves? Because the day has come to demand it. It is necessary for us to equip them in the best possible way to meet these better and greater demands.

Dr. C. E. Bentley, of Chicago:

I do not think there is any possibility of overcrowding our profession, for the reason that there are but twenty per cent of any given community in the United States that call upon us as a profession to care for their teeth. The other eighty per cent only come to us in dire distress and emergency, and it is the twenty per cent that you and I live on. Therefore, I do not think we need have any fear of overcrowding.

I want to take some exception to a remark in the paper with reference to educating the public. I understood Dr. Black to say that the public should be educated not by furnishing them with literature, or anything of that kind, but they should be educated by personal contact in our offices. I claim that the twenty per cent is but a very small proportion of the great number of people that should be reached, and I believe that a system of circularization of this other eighty per cent, indicating to them in a simple manner the needs and the importance of caring for their teeth, would be an education that will redound to the benefit and honor of our profession. In this connection the medical profession has taken some radical steps in the city of Chicago. The medical profession there has during the winter months on every Saturday evening given lectures on medical subjects to the laity. These are popular lectures for the purpose of acquainting the laity with the necessity of attending to certain conditions that pertain to health and sanitation, thereby becoming co-operators with the medical profession in raising the standard of health and of sanitation. One of these evenings has been given to the dentists, and they are doing what they can toward disseminating dental knowledge among a class of people who seldom consult dentists. Therefore, I think literature circulated through the medium of some organization of this kind, or through subsidiary organizations, will help very materially toward disseminating this knowledge which seems so much needed throughout the communities.

With reference to the remarks made by Dr. Gallie, I believe we have misunderstood him somewhat, and that in his enthusiasm he over-stated some things. I know his sentiments with regard to the requirements for dental education. He did not correctly quote himself; but I believe with Dr. Koch that the time is surely at hand when, at least, a high school education or its equivalent, is necessary, before one should enter upon the study of the profession of dentistry; not that I mean to say, that the arbitrary curriculum of a high school education is going to make a good dentist, but we as a profession must draw the line somewhere. What do you draw the line for? In order to have something like trained material when it comes to you for molding purposes. Abraham Lincoln was an untrained boy, so far as a classical education was concerned; but he through peculiar processes acquired a trained mind. Dr. Black never went to a high school. I have in my possession a history of Dr. Black, and his early education was less, possibly, than that of any man in this room; yet through processes of application he acquired a trained mind. Herbert Spencer, who attacked the system of education, never had the good fortune to go to a training school, but yet he acquired a trained mind. It seems to me, the standard is low enough, for we are not going to be considered what we ought to be, although we hope for it, unless we raise the intelligence of the profession. Digital manipulation alone is not going to do it. It is the trained mind that is fundamental, and all of this is of no practical value whatever unless it rests upon a scientific basis. Extension for prevention was practiced in a desultory way, and I may say in an unscientific way, long before G. V. Black ever discovered it. But it took the trained mind of G. V. Black to formulate into theory and give to us the fundamental doctrine upon which we now fill teeth scientifically. Nothing is practical unless it is grounded in science, and we cannot get scientific products from untrained minds, and if I had to think that the dental profession was to be dependent upon finger-craft alone, I would prefer to get out of it.

Dr. Edmund Noyes, of Chicago:

The most serious limitation of dental education at the present time is found in the indifference and inertia of the students in our dental schools to that part of their education which can be got out of books as distinct from that part which they get in the laboratory. The reason I want to speak of it here is because these students come to us with a very natural feeling that the principal part of their education, so far as the economic and commercial value is concerned, is to be found in the laboratory. They can see at a glance the immediate relationship between a good piece of work and some money to be obtained for it. They cannot see at a glance the immediate relation between a good knowledge of chemistry and the money to be had for it, but every one of those men who has been through a dental school and in practice for a little while, is aware of the value of knowledge that can be obtained from books. I think I can rightfully make that statement, and I do not believe there is any one of you who will refute it. Every one of the boys who goes to a dental school is under the immediate personal influence of some practitioner, before he gets to the school, and it behooves such practitioners to impress upon them that they must come to us with some idea that they must be scholars as well as mechanics.

Dr. Thomas L. Gilmer:

The paper of Dr. Black's is replete with good thoughts and in writing it he has left but little which may be added that will broaden the view of the subject.

It is certainly true that the people do not as yet demand a much higher standard of education than is now offered, at the same time those of us who are conversant with the present equipment of the recent graduate in dentistry, must know that to say the least he is not as well grounded in the fundamentals as he should be. That his technique is superior to that of the recent graduate from the medical schools we feel quite certain, but as a rule his theoretical knowledge is inferior. We should not wait, and I do not understand that the essayist suggests it, until the people are educated to a point where they demand better qualified men to serve them. It is our duty to create the demand by personal instruction of the people in the need for something better. I quite agree with Dr. Black that the best way to educate the people is by personal effort and not through the press. Dentistry does not occupy in the minds of the people as exalted a position as do other learned professions, and is not likely to until it attracts into its ranks men of broader education. I mean broader fundamental education. We have amongst us a few such men, and these have made dentistry more respectable, and in proportion as such men become associated with us will our standing be enhanced.

If our schools require as much time in acquiring an education as medical schools, men professionally inclined will take medicine instead, since medicine stands better in the estimation of the people, therefore is more attractive. Until we can put dentistry on equal footing in this respect we must require less time in college and I fear also require less fundamental education. I was not in favor of the addition of the fourth year to our course and do not believe that we are ready for it yet. Not that more time is not needed to more thoroughly equip our graduates, but I believe that we would accomplish better results by extending the entrance requirements than by adding a fourth year with only two years of high school as the minimum requirement. A young man with a high school education knows better how to study, the one with only two years of high school is handicapped from the first. Those of us who teach know that the student poorly equipped in primary training holds back those who have had better training. On this account our schools cannot do the most efficient work, as the work must be adapted not to the students best qualified, but to those the poorest equipped.

It has been said that some of our best men had nothing like the qualifications of the man with two years in the high school and still they have reached high places in the profession. I grant this, but think for a moment of the difficulties they encountered in reaching their exalted positions. First they had to educate themselves in order that they might grasp great problems. They spent many years in accomplishing what could have been gained in four years in the high school. All of these men will tell you that what they have most missed in their career was early primary training. They see it and realize the importance of the young man getting it before he commences his professional training. Times are different now to what they were forty years ago, the world has moved and conditions have changed.

I fear that we are educating our students in technique to the disadvantage of the fundamental branches if we are to make the best possible professional men of them. Are we not making of them rather mechanics than professional men? The medical student learns some of his technique after he graduates. If he is to be a specialist he devotes a year or more to the study of technical procedure after graduating in post graduate work or in practice. Why not let the dentist do the same? I do not believe that dentists need less technical training, but more anatomy, chemistry, physiology, materia medica, pathology, histology, etc. Men well qualified in primary education will better appreciate and comprehend these studies and when they have gained good knowledge of them are better fitted to undertake original investigation, and will impress themselves on the general public in a favorable way quite impossible to the less fortunate in these respects.

The classes graduating in dentistry for the past few years are smaller than for some time. There are several reasons for this. Business has been very prosperous for the past six or eight years and greater financial openings have offered, drawing young men away from the professions. It may be, too, that we were making dentists too rapidly for the demand, besides as we raise our requirements they drift into other professions which seem to offer more. In addition the backing and filling of the Faculties Association in changing to the four years' course then back again, and the tampering with the subject in general has undoubtedly had its influence in keeping out some. Our present entrance requirements and time limit should be adhered to and left alone for some years to come. When we have grown up to it then it will be time to extend one or both as may seem best.

Dr. C. P. Pruyn, of Chicago:

One of the first things we need to devote our attention to, when students come to us to enter upon dental education, is to inquire, Does the man have the mechanical aptitude? If students have not that mechanical turn of mind, it is useless to attempt to teach them those things that are so mechanical and which they must know and do if they would become successful practitioners.

When a man comes to matriculate, one of the first questions to ask him is, Are you handy with tools? If not, do not study dentistry, but take up medicine. Then the next question is, Is he sufficiently strong physically to stand the brunt that will come upon him during the years to come? Are his eyes in proper condition? Has he the mental make-up of a gentleman, besides having the mechanical aptitude necessary for the practice of dentistry? Has he the right moral character?

The greatest good to the greatest number is the thing we must think of, and we cannot adopt any rule or law that will not work injury to someone, but we must have some standard to go by. Personally, I think a high school course is low enough as a preliminary education for entrance to a dental college, and in the high school course there are two studies which he should have before he begins the study of dentistry. He must have a knowledge of Latin, if he does not, during the first year he is at sea; he must continually refer to his dictionary to find out the meaning of the words used by his teachers. They should also have a knowledge of physics. In our high schools, with the elective courses we have today, if these subjects are not included they ought to be, and we should insist on it.

Fortunately or unfortunately for myself, I am a member of the State Board of Dental Examiners. We as members of that board see the product that comes from the schools. After all care has been taken, at the present time some of the men that come to us are far below par, and it is our duty to draw the line and turn down some of the young men who have been given diplomas by different colleges. It is a sad state of affairs. As members of the Board, we try to do honest work in sitting as judges of our fellowmen, after they have put in three or four years of hard study, and expended the money necessary to get their diplomas. It is hard to turn them down because they cannot pass their examinations. It is a trying position for us to be in. So if at any time some of our near friends should be turned down by the Board, do not be too hard on us as members of the State Board, for I believe that we are too lenient rather than too severe.

Dr. Don M. Gallie, of Chicago:

I have been unintentionally misunderstood. In my previous remarks I did not make a plea for reducing the preliminary qualifications for entrance to dental colleges. It would be the most disastrous thing imaginable to lower the standard. My plea was that the large number of young men who have not had the opportunities and privilege of going through high schools ought to have some allowance made for what they know. We have been told that Herbert Spencer did not have a high school education. My plea is for the young men who are made of the right kind of stuff.

Dr. Black (closing the discussion):

I would like to have had the discussion confined more to the underlying principles of this subject, the basis upon which we must work to determine what we can accomplish, and less to the details. Over and over again, when I have said to a student who has come with two years of high school training, Why did you not complete your high school work? he has replied, "It was not required." Well, it should be required everywhere, and will be, I hope, hereafter. There are many men who have a knowledge that is equivalent to a high school education, and more, that never went to a high school, if we could really find it out.

Another thing. Young men come to us impressed with the idea that to do something is the thing in dentistry. Where do they get that idea? You can answer this. They got it from the men who were in practice before them. They also got it from the men who have something to say. I wish our students knew less about those men until the time they need them. It is to do something, not to think something. But what I want is for the student to think something.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States, its possessions and Cuba and Mexico. Canada, $1.40. All other countries $1.75 a year.

EDITORIAL.

RECIPROCITY BETWEEN STATES.

This question is coming more and more into prominence as men realize the unspeakable injustice of the present system whereby the most worthy and most capable practitioner of one state is debarred from practicing in any other state without submitting to a technical and theoretical examination alongside of recent graduates fresh from college. In this issue of the DENTAL REVIEW Dr. Houston of Wisconsin discusses the matter in a paper read before his state society, and at the recent meeting of the Illinois State Dental Society the committee on legislation brought in the following report bearing on this question, and also on the matter of the exemption of dentists from jury service. We hope that these two questions will enlist the consideration of those most instrumental in bringing about such reforms, to the end that greater equity and justice shall prevail.

REPORT OF COMMITTEE ON LEGISLATION.

Your Committee on Legislation desire to call your attention to the present condition of legislative enactments in the several states of the Union. Many of these are so essentially uniform in their requirements for admission to practice that it would seem opportune at this time to consider the question of establishing reciprocity.

Boards of Examiners of states that have similar laws and rules, and work under substantially equal requirements of qualifications from candidates, and that have a scope and methods of examinations that are practically uniform, should be enabled to agree upon a standard that they can reciprocally accept and recognize. Between at least some of the states, the right to practice might be given to the legally qualified practitioners of one state, by the board of examiners of another, without subjecting them to the same examinations given to applicants who make their first examinations for license.

In this connection, we wish to call attention to a recent enactment by the legislature of the State of Minnesota. It is an amendment, which went into effect last month, to their previously existing law, and reads as follows:

"Provided that any dentist who has been in legal practice in another state, having and maintaining an equal standard of laws regulating the practice of dentistry with this state, for five or more years, and is a reputable dentist of good moral character, and is desirous of removing to this state, and deposits, in person, with the Board of Dental Examiners a certificate from the Examing Board of the state in which he is registered, certifying to the fact of his registration and that he is of good moral character and professional attainments, may, at the discretion of the board, be granted a license to practice in this state without further theoretical examination."

To illustrate: If the States of Minnesota and Illinois require the same standard of preliminary education from dental students before beginning their dental course, and if they also require the same standard of dental education of candidates who may present themselves for license to practice before admitting them to an examination, it would seem reasonable that these boards may agree upon a line and conduct of examinations which shall be equally searching and thorough; and after such an agreement between these two or any other state boards of dental examiners, it would seem unreasonable and a hardship to require that successful candidates, who have become legal practitioners in any of the states of this Union, should undergo the same ordeal over and over again in the event that, through any circumstances they might be compelled to remove to another state, the board of which requires and accepts the same standard as they have already proven themselves to possess.

Your committee believes the time has come when this question should be thoroughly investigated, agitated and discussed. Reciprocity should be made operative wherever conditions warrant it, at the earliest possible date, to conserve the best interests of the public, of higher dental education and of the competent dentist.

The Illinois State Board of Dental Examiners, under the authority and permission of the present dental law, has been able to establish standards for the future practitioners of dentistry for this State that are fully equal to the standards established by any other states, and your committee believes that steps should be taken to bring about the reciprocal recognition of the decisions of these boards, as evidenced by the licenses they have issued to practitioners, upon examination.

It is believed that under the present law of Illinois the State Board of Dental Examiners has the power by a modification of its rules to arrange a separate examination for candidates who have been licensed in other states, or certain other states to be designated from time to time, said examination to consist of the certification of specified credentials, and such questions directly to the candidate as may seem fit, all of which together shall fully satisfy the Board as to the candidates proficiency in dentistry. The States to be specified shall be such as shall, in the opinion of the Board, maintain conditions for entry to examinations and examinations fully equal to those maintained by the State Board of Dental Examiners of Illinois.

In the event that additional legislation is necessary to give such reciprocal consideration full legal authority, we recommend this association pledge itself to the Board of Dental Examiners of this State to give its full support toward the securing of more explicit legislative authority from the next legislature, and that to this end, the co-operation of all the dental societies and their members be enlisted.

Your committee also desires to call your attention to the fact that practitioners of dentistry are not now, by statute, exempt from jury duty. The responsibilities of the dentist of today and the necessities of the public for his services are, in many instances, fully as great as those of the physician. Every reason, therefore, exists why people should be no more deprived of the services of their dentist by his compulsory service on juries than they are now of the services of physician, minister or lawyer, who are exempt.

We respectfully recommend that steps be taken to secure a law from the next General Assembly that shall place the dentist in the same category with other professional men who are exempt from jury service by reason of the urgent necessity for their services elsewhere, and, to this end, we recommend that the subsidiary dental societies in Illinois be requested to obtain pledges from the members of the legislature to be elected next year, to support such a law.

All of which is respectfully submitted:

Charles R. E. Koch,
J. W. Ritter,
R. N. Lawrence,
Committee.

THE NATIONAL DENTAL ASSOCIATION.

The coming meeting of this association at Minneapolis promises to be one of the very best ever held. The announcement of the program of essays and clinics shows that the various committees have done their work well, and have provided a scientific entertainment which will well repay every practitioner to attend. The men of the northwest are working very hard to make the meeting a success, and from present indications the attendance will be very large. A special train will be run from Chicago. The meeting comes just at the beginning of the vacation time, and there is no better way of starting a vacation than to attend our national meeting.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

New York, June 15, 1907.

My Dear Mr. Editor:

During the last month mysterious death has stalked among us, claiming three of our best. Dr. Richard C. Brewster of Brooklyn died on May 17th; Prof. J. Bond Littig passed the same way on the 23d; and Prof. John I. Hart joined the same mighty host last Sunday, June 9th. Each of these men were of sterling quality, men of unusual ability and standing, much admired and probably with fewer shortcomings than the average.

Dr. Hart's death was the most unexpected and to me the most shocking, as I saw him with his daughter on the street a few hours before his death. The obituaries of each will be so ably recorded that this announcement will suffice for the present.

On the 27th of May, Dr. J. V. Conzett of Dubuque, Iowa, was in the East and read a paper before the Second District Dental Society, the title of which was "Some Reasons Why Fillings Fail." The newly elected president, Dr. R. G. Hutchinson, occupied the chair.

Dr. Conzett treated the subject in the Black radical way, but in language so modest and persuasive that I am inclined to believe some were beguiled into thinking he was preaching conservatism of cavity preparation (for such really was the basis of the paper), although the doctor did tell how he places gold in the cavity, the kind of gold used, pluggers, etc., etc.

Of course, he told us that there were no "hard and soft teeth," but they were all practically alike, but that caries was due to "environment." That teeth presented areas of susceptibility and of immunity. That fillings should be extended the "two-third area"—the extension for prevention practice—extension to area of immunity.

The doctor said—if we do these things properly we will not have recurrence of decay. Gold can be placed in a cavity so as to hermetically seal it. All admit the great part personal equation plays in the salvation of teeth, manipulative dexterity of gold—which was what the doctor treated of entirely, but there are so many other factors that conduce to caries or tooth decalcification or degeneracy that extension to two-thirds area or nine-tenths or ninety-nine one-hundredths area will not prove a panacea. Carelessness, even very slight on part of the operator in preparation and handling of gold before, during and *after* manipulation for filling, and on the part of the gold beater and of the patient, oral galvanism, thermal susceptibility, tubular inflammation, thermo-electricity, humidity of atmosphere, incompatibility of materials, age and physical condition of patient, and a great many other factors of which we are not yet conversant with, that one is not justified in saying that "gold *can* be placed in a cavity so as to seal it in such a way that caries cannot recur again," immediately about it.

Dr. Conzett said that Dr. Black had deduced that fillings of less density than 14 specific gravity will not save teeth. There are some cases where 15 or even higher specific gravity must be used, especially where the buccal muscles are strong, etc.

He claims that by definite methods we get definite results, such as using pellets of same size, same character of gold, same amount of annealing, same number of blows given to each piece, etc., etc. He elucidated as a fact that the average of hand pressure of the ordinary dentist was between ten and twelve pounds. A few have developed some higher; Dr. McKellops, for instance, got as much as thirty-six.

As to the preparation of cavities it was said that grooves and pits for retention should be avoided and box-shaped and step cavity preparation made, as much as possible. In the restoration of incisal angles of incisors the pit should be avoided, but occlusal method (extending groove across the incisive edge) be practiced.

To insure fillings great attention must be paid to occlusion. Proper inter-proximal space should be acquired where teeth have tipped or changed position due to a proximal cavity so as to restore the mesio-distal diameter of the tooth. The normal and abnormal occlusion must be observed and where it is necessary to grind away an opposing tooth, do so.

Dr. Fossume of New York opened the discussion by endorsing all the essayist had to say, stating that since adopting Dr. Black's method it has taken less time to do his work.

Dr. LeRoy spoke of the personal equation, lack of care of surfaces of adjoining teeth (removing mucoid adhesions), fibres of cotton, etc., incompatibility of filling material and tooth structure, etc.

Dr. Ashe asked the question whether the essayist believed in cutting away all enamel unsupported by dentine, to which Dr. Conzett answered, Yes, particularly where any stress occurs.

Dr. Conzett in his closing remarks said that if we follow certain basic principles we get better results, and that cleanliness was undoubtedly a great part.

He uses non-cohesive gold for lining tooth walls, on account of its adaptability, and finishes with cohesive foil.

In answer to a question, he said that that form of cavity preparation does not interfere with the vitality of teeth more than the old system of grooves and pits.

The doctor modified his whole paper in the end by saying that no hard and fast rule could be laid down; a study of the problems as they present must be our guide, but even with it all we meet with failures.

May 28th was the fourth anniversary of the New York Institute of Dental Technique and some members of the New York Study Club's Metal Filling Class demonstrated the "Technique of Cavity reparation, Placing of Gold, Condensation, etc." Dr. F. E. Scofield of Brooklyn demonstrated "Gold Inlays," on the lines of Dr. Taggart's new method. The purpose of this society—composed of the young men—graduates, most of them within the last five or ten years—is evidenced by this extract from its constitution:

"Its objects shall be the advancement and teaching of dental technics and manipulative skill." It enters on its fifth year with nearly two hundred members and is doing good work. We believe this organization is going to be very acceptable, as it seems to be free from petty jealousies and political cliques.

The last meeting of dental societies in this vicinity for this season was the June meeting of the Institute of Stomatology. The paper of the evening, entitled "Early Oral Manifestations of Disease," was then read by Frederick Newhall Wilson, M. D., of New York. He strongly emphasized the desirability of physicians and dentists co-operating and working in harmony, citing instances where the dentist's prompt recognition and diagnosis of oral disturbances enabled the surgeon to save the patient from much suffering and perhaps death. THE BURROUGHS.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Open Face Crowns:—I condemn the ordinary open face crown without reservation. They are unclean, and I have never seen one stand the test of time.—*Chas. L. Alexander, Charlotte, N. C.*

Lower Partial Plates With Wire Connection:—In the construction of a lower partial denture I most heartily endorse the use of a wire connecting the two sides. I have been using this for years, and I find it the most satisfactory method of putting in partial plates I ever employed.—*F. E. Roach, Chicago.*

Securing the Fragments of a Lower Fractured Denture:—It if often difficult to securely wax together a broken plate, especially a lower partial. If a strip of wax such as the dental depots use to attach a set of teeth to, is softened and laid on a flat, unyielding surface—a piece of glass—the broken plate may be pressed, teeth down, into the wax, using both hands to hold the pieces in proper position.—*A. C. Willman, Kankakee, Ill.*

Burnishing Gold Plate to a Tooth:—When burnishing a piece of gold plate to a lingual or other aspect of a tooth a good practice is to place a piece of silk ribbon over the gold and carry the ribbon around the tooth so as to have both ends meet on the opposite side and hold them firmly with the fingers, thereby holding the gold plate in place. Under this silk the gold may be burnished with very little trouble.—*E. M. S. Fernandez, Chicago.*

Partial Crowns:—That a partial crown should be used whereever it is possible, instead of a gold banded crown, there can be no doubt. Every conscientious operator seeks to have engrafted upon the roots of molar and bicuspid teeth gold crowns. Wherever possible, he avoids putting a band around the root of the tooth, so that an inlay attachment is a substitute for this, and it is my opinion, after some experience of that kind, that it is firmer than any full gold crown.—*E. J. Perry, Chicago.*

Gutta Percha for Filling Teeth:—There is no filling material that will take the place of gutta percha except gold, and there are some places where you cannot put in gold and can put in a good gutta percha filling that will be more serviceable than anything else that could be placed in the cavity. Where there is no friction, no compression from mastication, or no mechanical wear on it there is no filling that is better than gutta percha, in my opinion, for the universal preservation of teeth.—*J. G. Reid, Chicago.*

Sociability:— There is no friendship so deep or permanent as that which springs from common interests. Life is no longer a hopeless battle in which some are doomed to defeat, but a glorious eternal privilege. Local societies should be encouraged to hold many social meetings that the barriers of formality may be overcome and the spirit of tolerance developed. To meet around the dinner table frequently is proving a splendid method of cultivating acquaintanceships which rapidly ripen into friendship—*Elgin Mawhinney, Chicago.*

Reciprocity:— We should rise above little petty hair-splittings and cause an amendment to our present law, or an entirely new law to be passed by the next legislature that will make every person who is legally entitled to practice dentistry in any state of the United States eligible to registration, on presentation of valid proof and the payment of a small nominal fee without examination, and then let the Association of Dental Examiners see to it that similar amendments are added to the laws in every other state.—*F. G. Van Stratum, Hurley, Wis.*

Repairing Gold Fillings:—My observations have led me to place a great deal of faith in amalgam used in the patching of gold fillings which have failed, either at the cervical margin or the usual proximal margin. There is a peculiar action between gold and amalgam that renders amalgam particularly useful as a patch alongside of gold, and I believe the same holds true of tin, and for the same reason that there is a certain electro chemical action between the base metals of the amalgam or the tin and the gold filling.—*W. V.-B. Ames, Chicago.*

Determining What Is Best for the Patient:—In all cases I take into consideration the temperament of the patient and the condition I have to work with. I believe it is useless, if the patient is slovenly with the mouth, does not keep the teeth clean, to break one's back in putting in a gold filling. I quit it years ago. Amalgam, cement, gutta percha, is as good as they will take care of, and what is the use of wearing yourself and the patient out with something they will not take care of? A man has to do the best he can for the patient and himself.—*J. E. Hinkins, Chicago.*

Preserve the Root:—In operative dentistry the same importance belongs to that portion of the tooth lying below the gum as that above it, and if our work is to endure, our best efforts must be exerted to keeping the root and the tissues surrounding it in a state of health. What results do we attain even if we apply our best energies to the construction of the repair—extension for prevention, occlusal anchorage, perfect contact points, well condensed gold, finely contoured gold or porcelain crowns. When we neglect the root all may be, and frequently is, lost.—*W. H. K. Moyer, Little Falls, Minn.*

Preparation of Impression Trays for Plaster:—It is sometimes difficult to prepare an impression tray to meet the requirements of the case in hand. The first impression may not be perfect but it will serve to produce a model which will give an outline of the tissues to which an impression tray may be fitted in the laboratory without subjecting the patient to the annoyance of having the tray placed in the mouth so often. If the operator is at all doubtful as to the adaptation of his impression tray it might be better for him to take an impression in modeling compound, obtain a model, adapt the impression tray to the model in the laboratory and then proceed to take the impression with plaster-of-paris.—*G. W. J.*

The Use of Plastics for Temporary Work:—I cannot see why dentists today will persist in the use of cement in proximal cavities for temporary work. A plastic filling is necessarily temporary, and it is expected it will be renewed in six to twelve months. The use of cement in any of the proximal cavities I think is the worst piece of work a dentist can possibly do, because gutta percha in the recurring decay that comes under large gold fillings is the only thing that will stay there. Cement will not stay there. In all probability the decay has extended so far, if it reaches up to the occlusal surface, that the tooth next to it has fallen into the cavity and you have not space. There is no easier way of obtaining space than by putting a gutta percha filling in the cavity and rendering it good for three to six months, or even a year, and by the time you want to insert an inlay or gold filling you have the necessary amount of space.—*L. L. Davis, Chicago.*

Moral Effect of Difficult Operations:—It has been unfortunate in the past, I think, that so many remarks have gone out from skilled operators, especially in porcelain inlay, that there was nothing to preserve the tooth substance but inlays. I have seen some of the most inartistic work in inlays in the mouths of people where I have seen by the same operator splendid gold fillings that had done service for many years. While there are always indications for inlays in operative dentistry, I think many have gone astray on inlays. This leads probably to loss of good manipulative ability, to good judgment and the moral effect on the individual when trying to do one thing all the time. Anything that tends to lessen the skill of a man in handling his fingers, lessens his ability to be a good dentist, because much depends upon the manipulation of the material, and if he can put in a good gold filling, and he ought to do that four times a week for practice, his judgement and his moral stamina would be better fortified for doing any other class of operations.—*G. W. Cook, Chicago.*

Investment Plaster:—Investment plaster of the most reliable and inexpensive kind can be made by any dentist from the following formula: Quantities are by measure, not by weight.

Good quality of ordinary dental plaster...	2 parts
Pulverized mica	1 part
Marble dust, pulverized fine.............	1 part

This combination, if carefully and thoroughly mixed, will be found specially adapted to every department of the dentist's laboratory. While experimenting, thinking I had perfected the formula, I prematurely gave out a few samples which did not give satisfaction, but this formula will be found thoroughly reliable. The mica and marble dust should both be pulverized as fine as flour for the finest class of work. This plaster is of the quick setting kind. The stiffer any investment plaster is mixed the quicker it will set.

Pulverized mica can be obtained from the United States Mica Mining and Milling Company, at Micanite, Colorado, main office in Chicago, Ill.— *H. A. Cross, Chicago.*

MEMORANDA.

DEATH OF DR. W. N. TULLER.

Dr. Tuller, who was a son of Dr. R. B. Tuller, of Chicago, died at Carlsbad, N. M., of typhoid fever, aged 24. Dr. Tuller was a very promising young man, beloved by everybody, and his death is a sad loss to his parents. The DENTAL REVIEW extends condolence.

TREATMENT OF PYORRHEA.

Dr. Gustavus North, Cedar Rapids, Iowa, says:

"After all deposits have been removed and the gums properly treated, I administer Sal Hepatica, from one to two teaspoonfuls (according to condition of patient), dissolved in a tumberful of water, each morning about thirty minutes before breakfast. It is an effervescent, saline laxative and uric acid solvent. I have had wonderful success with the above treatment."

NORTH DAKOTA DENTAL ASSOCIATION.

At the annual meeting of the North Dakota Dental Association officers were elected as follows: H. L. Starling, president; T. G. Thompson, vice-president; O. H. Sossaman, secretary; S. Rowan, treasurer. The Association meets on the second Tuesday of May each year. Devils Lake was selected as the next meeting place.

O. H. SOSSAMAN,
Secretary.

THE JAMESTOWN DENTAL CONVENTION.

Editor THE DENTAL REVIEW, Chicago, Ill.

Dear Doctor: I am in receipt of a letter from Dr. R. Ottolengui, of New York, announcing a change in the title of his Jamestown paper, as follows: "The Purposes and Accomplishments of Modern Orthodontia."

I will thank you to make the change at once in accordance with his wishes. Yours very truly,

H. WOOD CAMPBELL,
Secretary Organization Committee.

ILLINOIS STATE DENTAL SOCIETY.

The Illinois State Dental Society held its forty-third annual meeting at Quincy, May 14 to 17, 1907.

The following officers were elected for the ensuing year: President, W. A. Johnston, Peoria, Ill.; vice-president, Henry L. Whipple, Quincy, Ill.; secretary, Arthur D. Black, Chicago, Ill.; treasurer, C. P. Pruyn, Chicago, Ill.; librarian, J. T. Cummins, Metropolis, Ill.

The 1908 meeting will be held at Springfield May 12, 13, 14 and 15.

ARTHUR D. BLACK,
31 Washington St., Chicago. Secretary.

DR. OTTOLENGUI TWICE HONORED.

At the commencement exercises of the Chicago College of Dental Surgery, May 28, 1907, the honorary degree of LL. D. was conferred upon Dr. R. Ottolengui by Valparaiso University, and about the same time Dr. Ottolengui received notice from the officers of the Odontological Society of France that the title of honorary member had been conferred upon him, and the diploma of the society forwarded to him. It gives us pleasure to extend to Dr. Ottolengui our cordial congratulations at this double recognition of his services rendered to the science and art of dentistry.

INTERSTATE DENTAL FRATERNITY.

The board of governors of the Interstate Dental Fraternity will convene for the annual business meeting of the order in Minneapolis, Minn., Monday, July 29, at the West Hotel. The annual banquet will occur during the week and due notice thereof will be sent to the members as soon as arrangements can be made and the exact date fixed. It is hoped that the Fraternity will meet in large number on this occasion.

DR. R. M. SANGER,
National Secretary.

East Orange, N. J.

UNRELIABILITY OF DENTAL CEMENTS.

A very bright young dentist recently propounded the following: "Why do all dental cements wash out or become malodorous?" Answering him I said: "By the framing of your interrogatory you assume that the fact of washing out or becoming malodorous is proven or admitted." Granted that it is a fact the answer is easily found, can be briefly stated and as easily understood. Hitherto the makers of dental cements have not chosen materials that are molecularly and combinedly impermeable to moisture.

A. C. HEWETT,
Chicago.

RECENT PATENTS OF INTEREST TO DENTISTS.

851,483. Moistening attachment for dental engines. George Bartlett, Lenapah, I. T.

851,501. Tooth brush. Ernest L. Detrick, Cleveland, Ohio.

851,550. Toot brush guard. John C. Nevius, Trenton, N. J.

851,578. Artificial teeth. Walter O. West, New Orleans, La.

852,159. Dental tooth handle. Joseph Bode, Philadelphia, Pa.

851,735. Dental appliance. Chester M. Dowell, Elkhart, Ind.

852,266. Artificial teeth. Ernest D. R. Garden, Tarrytown, N. Y.

852,413. Removable dental bridge work. Ernest C. Bennett, New York.

853,031. Dental instrument. Augustus B. Prentis, Marshfield, Ore.

853,405. Tooth powder retainer. Ernest R. Godward, Invercargill, New Zealand.

853,549. Tooth brush and powder receptacle. John P. Hill, Baltimore, Md.

853,372. Machine for making wooden toothpicks. John H. Nute, Portland, Maine.

853,421. Dental chair. Frank Ritter, Rochester, N. Y.

Copies of above patents may be obtained for 15 cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

PRIZE.

The Rotterdamsche Tandheelkundige Vereeniging (Rotterdam Dental Society) offers a reward of $120 (£25, 300 francs) for the invention of a Gnatho-Dynamometer that will be suited for use in dental practice.

The instrument has to assign a pressure to 200 kilogram. Below 20 kg. the deviation may not surpass 1 kg., while with heavier pressure it ought to remain within 2 kg. The chew-contact plates must allow the induction between a distance of 1 cm.

Although the instrument has only to assign the pressure in one direction, it ought to work with a moderate lateral movement too. With the front teeth only the pressure with edge to edge bite, not with overbite, has to be measurable.

The instrument ought to be simple, strong and readily sterilized, as far as it comes in contact with the mouth. The chew-plates must not do damage to the teeth. When examined, the assigner ought to be readjustable. The competitors are requested to send franco specimen, until October 1st, 1908, to the Rotterdamsche Tanheelkundige Vereeniging, 115 Aert van Nesstraat, Rotterdam, accompanied by a motto and a description of use. Moreover a sealed envelope signed with the same motto, and containing the name and address of the inventor.

The jury is composed of the dentists: B. Frank, A. A. H. Hamer, I. J. E. de Vries, Amsterdam, C. H. Witthaus, Rotterdam, besides a technical expert. Decision will be made in December, 1908.

The result will be communicated to all competitors; they will get back their instruments.

The prize will be delivered in January, 1909, at the annual meeting of the Rotterdamsche Tanheelkundige Vereeniging.

Dental and technical papers are politely requested to publish this communication.

M. Isebree Moens.
Secretary.

NATIONAL DENTAL ASSOCIATION.

The eleventh annual meeting of the National Dental Association will be held in Minneapolis, Minn., July 30 to August 2, 1907.

In many ways this promises to be the most interesting and important meeting in the history of the association, and as it has been some years since a meeting of the national association was held in this section of the country, it is confidently expected that the attendance will surpass that of any previous session.

The general sessions of the association will be held in the First Baptist church, corner Tenth street and Harman place, and it is proposed by the program committee, in consequence of a prevailing sentiment, that all papers be read so that the entire membership may have an opportunity to hear and discuss them. Only one section, therefore, will be in session at the same time.

There will be sufficient time allowed in carrying out the program so that each section will have two sessions of at least three hours' duration, which should be ample to complete the work.

Membership in the association is open only to delegates from state societies, yet a most cordial invitation is extended to all reputable practitioners to attend the meeting.

Reduced rates on all railways except in Minnesota, on the certificate plan, of a round trip for a fare and a third, has been secured, full details of which will appear in the official announcement.

Hotel Plaza has been designated as headquarters for the association, while the clinics and dental exhibit will be held at the National Guard Armory, on Sixteenth street. Hotels and rates are as follows:

The Plaza, $2 per day and upward. European plan.
The West, $1 per day and upward. European plan.
The Nicolett, $1 per day and upward. European plan.
The Majestic, $1 per day and upward. European plan.

For hotel reservations, etc., address the chairman of the local committee of arrangements, F. B. Kremer, Masonic Temple, Minneapolis, Minn.

Minneapolis and vicinity is one of the most interesting and beautiful sections of our country, and particularly so at this season of year, and in addition to this our local committee of arrangements is planning many features of interest for the entertainment and convenience of all, and it is the earnest wish and expectation of the officers of the association that there shall be a large attendance at the meeting.

The following is the program as far as completed:

SECTION I.

Dr. L. C. Bryan, Basle, Switzerland—"The Over-Arch-Bar in Bridge Work."

Dr. Emory A. Bryant, Washington, D. C.—"Some Practical Experiences Theoretically Expressed."

Dr. Guilhermena P. Mendell, Minneapolis, Minn.—"Treatment of Mal-Occlusions of the Deciduous Teeth."

Dr. Charles L. Hungerford, Kansas City, Mo.—"Evolution."

Dr. Marcus L. Ward, Detroit, Mich.—"The Effect of Excesses of Mercury Upon Shrinkage, Expansions, Edge-Strength, Flow, Change in Composition and Stability of the Dental Amalgam Alloys."

Dr. C. M. Work, Ottumwa, Iowa.—"Porcelain: The Cavity and the Matrix."

Dr. F. G. Corey, Council Grove, Kas.—"Physical Conditions of or Pertaining to the Human Teeth."

Dr. J. V. Conzett, Dubuque, Iowa.—"Method of Replacing Broken Facings on Crowns and Bridges."

Dr. D. O. M. Le Cron, Chairman, St. Louis, Mo.; Dr. E. P. Dameron, Secretary, St. Louis, Mo.

SECTION II.

Dr. Carroll H. Frink, Fernandina, Fla.—"An Original Method of Casting Gold Inlays." (Illustrated with India ink drawings and models showing technique.)

Dr. L. G. Noel, Nashville, Tenn.—"Modern Methods of Combining Cohesive Gold with Non-Cohesive Gold, with Tin and with Tin-Gold."

Dr. Thomas B. Hartzell, Minneapolis, Minn.—"Physical Characteristics and Surgery of Pyorrhea."

Dr. G. O. Orr, Jordan, Minn.—"The Functions of the State Dental Society"

Dr. Charles McManus, Hartford, Conn.—"Dental Literature."

Dr. William Crenshaw, Chairman, Atlanta, Ga.; Dr. J. J. Sarrazin, Secretary, New Orleans, La.

SECTION III.

Dr. Victor C. Pedersen, New York City—"Buccal Manifestations of Syphilis."

Dr. Herbert L. Wheeler, New York City—"The Prevention of Disease of the Mouth and Teeth by Proper Oral Prophylaxis in the Young."

Dr. Truman W. Brophy, Chicago, Ill.—"Anatomy of the Palate: Normal and Cleft."

Dr. Joseph Head, Philadelphia, Pa.—"Prophylaxis with Special Reference to the Wisdom Teeth."

Dr. Robert T. Oliver (U. S. A. Dental Corps)—"Dental and Oral Lesions of Leprosy."

Dr. Arthur H. Merritt, New York City—"Mouth Infection the Cause of Systemic Disease."

Dr. William Carr, Chairman, New York City; Dr. M. L. Rhein, Secretary, New York City.

In addition to the above, the largest and most varied clinic the association has ever held will be given on Wednesday and Thursday.

Dr. A. H. Peck, President, Chicago, Ill.; Dr. C. S. Butler, Buffalo, N. Y.

N. D. A. CLINIC.

I regret exceeding to say that I have heard from very few of the state chairmen, therefore, it is not possible to give the program in detail.

The headquarters in Minneapolis will be the Plaza Hotel. The clinics will be held in the Armory, one-half block from the hotel.

The clinic will be the largest the National has ever held. There will be sixty-five practical operations on Wednesday, July 31st, and the same number of operations on Thursday, August 1st.

About forty of these one hundred and thirty operations will be the making and placing of inlays. The remainder of the operations will be divided into gold, amalgam, tin, cement and gold and tin fillings, the removal of calculus, the administration of local anesthetics, etc., etc.

There is every evidence at hand that there will be the usual large number of men holding table clinics. Until the various chairmen make their reports, I am unable to complete the program.

On Thursday, June 20th, the program will go to the printer. It will be impossible thereafter to place names on the program.

I am very thankful that there is to be another clinic at Jamestown in September. Had there not been such a meeting arranged it would have been impossible to have a place for all who desired to make clinics.

Dr. W. N. Murray, of Minneapolis, will have charge of the inlay section.

Dr. F. S. Yeager, of St. Paul, will have charge of the table clinics.

Dr. W. A. Grey, of St. Paul, will have charge of the surgical clinics, of which there will be a number.

All of these men will appoint their own corps of assistants.

Drs. Carlson, Cox, Wells, Wilson and myself will be in the clinic room and we shall do everything possible to assist the operators.

After using considerable persuasion, Dr. J. B. Ridout, of St. Paul, has agreed to give a blow pipe demonstration. It is well worth making a trip from New York to Minneapolis to witness this clinic. I am able to unhesitatingly endorse the demonstration which Dr. Ridout will give, for I feel that it will be one of the most interesting and attractive of all the table clinics.

Dr. Bryan and Dr. Muller, of Switzerland, are journeying to the meeting with some things in the mechanical line which they feel are all important and of the greatest value for everybody to see.

These are simply special features.

I said there would be one hundred and thirty practical demonstrations in Minneapolis on the two days of the clinic. I speak in this way for the reason that the men belonging to the Metal Filling Clubs in the Northwest have requested to be allowed to fill any and all vacancies which might occur. This action on their part is not only most laudable, but it at once assures those who will attend the meeting of witnessing the largest operative clinic ever arranged for the consideration of the members of the N. D. A.

I return most sincere thanks to all who have been so willing to work and who have assisted Dr. Clack and myself to arrange the best clinic possible.

I also wish to return many thanks to the editors of the different dental journals for their assistance and co-operation. It was very kind of you gentlemen.

My program at present contains the names of the following gentlemen who will make operations:

SURGICAL CLINIC.

W. H. G. Logan, Chicago, Ill.
L. F. Luckey, Birmingham, Ala.
W. H. DeFord, Des Moines, Iowa.

INLAY SECTION.

R. H. Volland, Iowa City, Iowa.
C. H. Farrand, La Crosse, Wis.
E. H. Bimrose, Butte, Mont.
C. M. Work, Ottumwa, Iowa.
W. H. Cudworth, Milwaukee, Wis.
J. E. Meyers, Minneapolis, Minn.
W. C. Pike, Minneapolis, Minn.
T. W. Russell, Minneapolis, Minn.
A. E. Peck, Minneapolis, Minn.
F. B. Kremer, Minneapolis, Minn.
J. O. Wells, Minneapolis, Minn.
W. N. Murray, Minneapolis, Minn.
W. J. Brownlee, Devil's Lake, N. D.
J. Q. Byram, Indianapolis, Ind.
L. C. Elkins, St. Augustine, Fla.
C. A. Sevier, Jackson, Tenn.
A. G. Fee, Superior, Wis.
R. R. Fisk, Spokane, Wash.
G. W. Schwartz, Chicago, Ill.
J. D. Park, Duluth, Minn.
A. A. Jennings, Milwaukee, Wis.
S. J. Pattison, Fargo, N. D.
P. B. McCullough, Philadelphia, Pa.
C. G. Von Suessmilck, Duluth, Minn.
A. T. Reeves, Selma, Ala.
C. H. Seeger, Manitowoc, Wis.

OTHER OPERATIONS.

H. J. Beemer, Newton, N. J.
J. J. Booth, Marion, Iowa.
E. S. Brown, Edina, Mo.
F. Bernard, Kennett Square, Pa.
J. V. Conzett, Dubuque, Iowa.
W. G. Crandall, Spencer, Iowa.
William Finn, Cedar Rapids, Iowa.
J. W. S. Gallagher, Winona, Minn.
C. L. Gunn, Gadsden, Ala.
T. B. Hartzell, Minneapolis, Minn.
F. A. Hargrove, Fond du Lac, Wis.
F. S. James, Winona, Minn.
W. O. Lovett, Brewton, Ala.
C. B. Miller, Cedar Falls, Iowa.
W. H. K. Moyer, Little Falls, Minn.
S. G. McCallin, Chicago.
C. H. Oakman, Detroit, Mich.
J. B. Pherrin, Central City, Iowa.
F. S. Robinson, Chippewa Falls, Wis.
F. G. Richardson, Mason City, Iowa.
J. W. Slingluff, Burlington, Iowa.
Alice M. Steeves, Boston.
J. F. Wallace, Canton, Mo.
P. H. Wright, Oxford, Miss.
O. C. Zieger, Owatonna, Minn.
G. N. Beemer, Mason City, Iowa.
C. N. Booth, Cedar Rapids, Iowa.
A. D. Black, Chicago, Ill.
T. F. Cooke, Burlington, Iowa.
W. R. Clack, Clear Lake, Iowa.
A. C. Fawcett, Rochester, Minn.
C. J. Grove, St. Paul, Minn.
L. Greenbaum, Philadelphia, Pa.
G. S. Handy, Natchez, Miss.
P. H. Jones, Clear Lake, Iowa.
W. B. James, Tracy, Minn.
A. M. Lewis, Austin, Minn.
H. R. Mavis Minneapolis, Minn.
G. D. Moyer, Montevideo, Minn.
F. N. Owens, St. Paul, Minn.
A. R. Owre, Minneapolis, Minn.
W. S. Pugh, Mobile, Ala.
W. J. Reynolds, Selma, Ala.
C. H. Robinson, Wabasha, Minn.
A. C. Searl, Owatonna, Minn.
F. G. Van Stratum, Hurley, Wis.
C. E. Woodbury, Council Bluffs, Iowa.
T. J. Yerke, Owatonna, Minn.

The following gentlemen have signified their intention of holding

TABLE CLINICS.

J. E. Argue, Red Lake Falls, Minn.
A. P. Burkhart, Buffalo, N. Y.
L. C. Bryan, Basel, Switzerland.
G. A. Bowers, Nassau, N. H.

H. L. Cruttenden, Northfield, Minn.
J. C. Corcoran, St. Paul, Minn.
I. N. Carr, Durham, N. C.
C. H. Frink, Fernandina, Fla.
W. L. Fickes, Pittsburg, Pa.
G. F. Hauser, La Crosse, Wis.
F. R. Houston, Green Bay, Wis.
C. W. Jones, St. Paul, Minn.
C. H. Land, Detroit, Mich.
Eugene Muller, Zurich, Switzerland.
G. C. Marlow, Lancaster, Wis.
F. A. Peeso, Philadelphia, Pa.
J. W. Ritter, Charleston, Ill.
E. F. Summermeyer, Eau Claire, Wis.
S. S. Stowell, Pittsfield, Mass.
E. F. Tinker, Wheatland, Iowa.
O. A. Weiss, Minneapolis, Minn.
W. S. Curtis, Montpelier, Vt.
J. P. Carlisle, Greenville, S. C.
F. E. Dodson, Grand Rapids, Mich.
W. N. Fine, Philadelphia, Pa.
E. A. Honey, Kalamazoo, Mich.
J. A. Hall, Collinsville, Ala.
G. F. Jernigan, New York, N. Y.
J. L. Kelly, St. Paul, Minn.
C. W. Lokey, Talladega, Ala.
W. H. McNeil, Minneapolis, Minn.
C. P. Peterson, Mankato, Minn.
J. B. Ridout, St. Paul, Minn.
C. F. Rodolf, Muscoda, Wis.
A. C. Stuerwald, St. Angars, Iowa.
A. J. Sawyer, Manchester, N. H.
M. L. Ward, Detroit, Mich.
J. D. Wise, West Point, Miss.

This constitutes the clinic up to date. But three chairmen have reported from their states. There will be many more names to add to this program when the rest of the reports reach me.

E. K. Wedelstaedt.
Chairman Clinic Section, New York Life Building, St. Paul, Minn.
May 30, 1907.

COLLEGE COMMENCEMENTS.

BARNES UNIVERSITY—DENTAL DEPARTMENT.

Graduates.—G. C. Ackley, J. Q. Adams, H. G. Baugh, M. W. Ballance, G. W. Burrows, B. F. Berry, J. A. Case, B. B. McKellops, B. F. Miller, H. Osterheld, E. R. VanBooven, A. H. Winklemeyer.

COLORADO COLLEGE OF DENTAL SURGERY.

Graduates.—R. A. Bashar, I. R. Bertram, J. M. Brady, J. E. Canning, K. K. Cross, H. B. Evans, A. W. Heitler, M. R. Howard, Mrs. L. Lambert, M. M. McNutt, M. E. Pankey, J. H. Royer, T. D. Terry, R. U. Vaughan.

UNIVERSITY OF SOUTH CALIFORNIA.

Graduates.—C. R. Benny, W. R. Burbeck, H. S. Duff, C. O. Engstrom, F. Fitzgerald, R. W. Force, H. B. Harwood, C. C. Howard, J. P. Lape, D. D. S., C. E. Lawler, J. C. Magill, B. B. McCollum, W. G. McHargue, E. E. Osenburg, G. L. Richardson, J. R. Ross, T. Shiina, R. B. Skinner, J. A. Somerville, P. F. Spicer, W. F. Whelan, C. E. Williams.

NORTH PACIFIC DENTAL COLLEGE.

Class Roll.—M. C. Adams, W. R. Bilyeu, D. S. Bomgardner, W. O. Boon, H. P. Borders, A. D. Dahlman, R. E. Duganne, R. E. Farnsworth, W. D. Huntington, R. L. Jeffcott, T. A. Jones, W. C. Ketchum, D. T. Kerr, W. D. Lee, R. P. Nixon, D. M. Ogden, F. H. O'Neil, S. D. Partch, R. R. Penepacker, W. E. Pittenger, E. Ringhoffer, T. K. Sanderson, L. G. Schell, J. E. Sharp, W. A. Short, L. P. Sorensen, E. E. Starr, L. S. Stejer, J. Swanberg, J. R. Tidball, G. T. White.

WASHINGTON UNIVERSITY DENTAL DEPARTMENT (MISSOURI DENTAL COLLEGE.)

Graduating Class, 1907.—S. T. Adams, H. G. Baird, H. B. Bolt, G. M. Byrne, E. M. Carson, E. M. Conner, K. Eggemann, M. J. Gessel, A. J. Grodzki, R. N. Halloway, W. L. Hunt, C. W. Johnson, J. D. Jordan, A. A. Kalbfleisch, E. H. Keys, J. C. Logan, E. J. Logue, H. O. Neville, H. W. Patterson, W. E. Peak, J. O. Rice, F. Roberts, W. M. Schindler, P. W. Schroeder, M. H. A. Schmid, W. R. Smith, I. M. Sternberg, J. H. Sunderland, G. P. Tellmann, F. E. Thornburgh, A. LaV. Tice, J. V. Wavrin, C. E. Wieser, E. C. Will, M. E. Winters, H Zanitsch.

INDIANA DENTAL COLLEGE.

Graduates.—J. F. Adams, M. Avery, O. J. Bicknell, C. Biggs, A. Bogran, R. L. Bosler, A. J. Bower, E. Brooks, J. Burris, H. Caton, L. M. Childers, D. E. Cofield, J. W. Cofield, B. P. Conner, H. L. Curry, D. DuBois, J. Duncan, C. A. Eller, K. Freeman, D. E. Gruber, G. Hein, W. H. Heyler, H. Huffman, E. Jenkins, C. L. Jones, N. Juell, P. A. Keller, B. Koons, H. Koss, R. Kuykendall, W. J. McGrath, H. P. McKeand, H. C. McKittrick, C. D. Mitchell, R. B. Murphy, C. Pease, E. Pedlow, Z. Rector, E. Ross, A. A. Smeigh, C. H. Smith, G. H. Smtih, H. Smith, D. K. Spitler, A. L. Steward, G. V. Underwood, J. M. Walsh, F. B. Warvel, C. C. Wright.

ST. LOUIS DENTAL COLLEGE.

Graduates.—J. H. Allen, W. H. Bigler, J. F. Boeke, J. R. Bunch, F. Demko, Jr., M. D. Eddleman, E. W. Emery, A. W. Farrington, T. F. Fleming, W. C. Gerstenkorn, A. T. Gissy, J. R. Gossett, C. L. Gove, R. R. Hardesty, B. O. Haun, E. C. Kennen, Jr., H. Kirkendall, W. T. Kitchell, O. R. Lee, C. E. Lynott, M. B. McKee, L. R. Main, L. A. Mannahan, H. A. Moreland, R. J. Padberg, A. B., J. F. Paschek, W. D. Pence, R. G. Sendke, J. L. Shanklin, G. Singletary, C. A. Slawson, G. H. Slawson, L. M. von Nahmen, W. L. von Nahmen, E. O. Williams, R. H. Wolf, R. T. D. Witty.

CHICAGO COLLEGE OF DENTAL SURGERY.

Graduates of 1907.—E. P. Ahrens, H. Barnett, H. D. Britan, B. A., R. Bruphbacher, F. P. Baker, A. J. Casner, T. B. Childs, H. W. Clarke, C. W. Cox, C. LeR. Cloes, M. H. Duffy, C. H. Ellingsen, W. C. Faust, G. Fiordelmondo, M. D., F. A. Fidler, R. D. Gee, H. G. Green W., E. Groff, R. N. Hill, R. S. Howe, K. J. Holland, M. W. Hooker, H. H. Heiple, W. S. Hoge, R. MacM. Havens, A. F. KKenney, R. Kirkpatrick, B. A., F. W. Koehler, A. H. Lemke, B. Sc., G. L. Lemley, G. C. Lipton, C. H. LeFevre, I. E. McCarty, J. Mattingly, F. C. Meyers, W. J. Morrissey, I. C. Morrical, T. A. Montgomery, M. H. Mortonson, L. A. Muedeking, C. W. Mueller, R. D. Murray, A. E. McEvoy, W. L. Neely, W. C. Noel, E. J. Nourie, W. Norwood, P. Nespoulous, M. D., D. F. M. P., G. C. Niles, O. B. Nagelsaker, A. J. Oidtmann, W. H. Petty, W. H. Porter, E. C. Pendleton, J. C. Purdie, A. F. Quick, W. A. Quinlan, F. A. Randolph, S. A. Ridley, D. W. Ross, W. E. Russell, Ph. G., R. D. Russell, J. H. Rockwell, J. E. Schaefer, F. I. Shaffer, C. M. Smith, J. M. Smith, A. G. Snavely, H. L. Stratton, R. J. Steven, B. R. Sugg, D. A. Shinn, S. B. Thatcher, W. I. Timmer, F. H. Uppendahl, W. D. Vehe, C. E. Woodward, H. L. Weber, A. M., M. D., E. D. Watts, H. F. Watts, D. H. Woodward, G. A. Walther, G. C. Zunini, M. D., W. E. Zavitz.

NEW YORK COLLEGE OF DENTISTRY.

Graduates.—Al R. Allen, J. M. Atchason, Ph. G., I. A. Backal, B. B. Badanes, A. M., O. O. Bartel, T. J. Bartley, M. Berall, I. Berger, *E. Bier, *E. A. Bishop, LeR. M. Bleyer, *E. Brand, A. N. Bresler, W. T. Carpenter, S. Cohen, *A. L. Cone, J. B. Davidson, J. D. Davis, M. B. Dimin, L. Eliasberg, A. L. Feldman, J. Filler, M. Friedman, S. Gerber, B. W. Glover, N. Gold, E. Graboff, *W. M Guensch, G. L. Havell, S. M. Hinman, E. M. Hochdorf, *H. Hollander, A. A. Jacobs, S. I. Kalish, *A. A. Kauffman, C. Kriegel, A. Lappner, M. D., L. J. Lautman, L. L. Lazarnick, C. H. Leibowich, I. Leibowitz *I. Levy, I. Lipnitzsky, A. P. Loesberg, L. Loewinger, D. Ludwig, D. J. Machol, A. W. Mac Vey, J. W. Maddren, D. Marks, S. A. Massell, S. G. Michlin, R. Morrow, W. H. Morse, Jr., M. Nevin, J. Pensak, *A. Pflantzer, L. R. Posner, N. Rabinoff, H. E. Ramsey, I. H. Rogow, *H. G. Sachter, O. Sarchy, H. Schlesinger, J. H. Schwerdtfeger, P. Segal S. Seidman, H. Shapiro, *S. I. Sherman, Isadore Silverman, S. Silverman, C. L. Singer, *H. F. Smith, P. S. Sprinz, C. P. Turner, R. E. Tuthill, M. H. Uberman, W. T. Van Winkle, J. L. Wasserman, *A. H. Weisberger, A. Wellward, F. W. Werner, M. William, W. Wolfer, A. Wolfson, D. Zimmerman, *R. Zuckerman.

*Curriculum requirements completed, but degree withheld until legal requirements are fulfilled, when the degree will be conferred at the following meeting of the Board of Trustees and Directors.

UNIVERSITY OF PENNSYLVANIA—DEPARTMENT OF DENTISTRY.

Graduates—J. J. Armitage, R. E. L. Audry, F. P. K. Barker, E. W. Bauman, J. L. R. Baxter, R. Black, C. F. Bonawitz, H. H. Bond, E. Bortin, D. Brewster, T. A. Buckley, G. A. Burdick, C. O. Burt, H. H. Conradsen, T. S. Cooney, W. F. Cooper, A. P. Davison, W. A. Dessingue, I. C. Detweiler, A. H. Dillon, T. A. Dillon, I. J. Donnelly, A. T. Dooley, W. J. Dwyer, J. C. Entriken, J. J. Ervin, E. S. Filbert, E. R. Flatley, G. M. Flint, J. J. Galligan, M. M. Goldman, C. L. Gowen, C. B. Grim, N. S. C. Hales, R. G. Hammond, C. R. Herrington, C. A. Hodder, B. M. Hunter, H. H. Hunter, L. R. James, C. H. Jean, G. F. Kellogg, P. Kurtz, F. P. Lieberman, R. Lemiere, H. F. Lombard, J. B. Longwell, W. A. Lowndes, J. L. McAteer, F. L. McCormick, J. A. McKone, H. P. McPherson, A. F. Marr, R. F. Merriam, C. C. A. Michel, P. E. Miller, E. F. Millet, L. M. Molineaux, H. T. Moreland, A. Moreno, F. T. Newman, F. V. Nicholson, F. W. Nuffort, C. M. Oliver, J. S. Owens, D. Papp, R. S. Parker, R. M. Parker, F. W. Peeso, M. Peyser, J. F. Pires, H. T. Porteous, E. F. Ros, L. Ros, W. H. Schaeffer, L. R. L. Scott, E. Senior, A. C. Shaddock, M. A. Sierra, D. R. Singleton, V. C. Smedley, F. H. Solomon, N. E. Sprague, E. Stachelin, N. W. Stewart, G. A. Stowe, M. R. Sullivan, C. P. Tacail, H. J. Thomas, S. G. Tubiana, M. Ulbrich, H. L. Villain, J. A. Wagg, G. F. Watson, S. F. Williams. In University Council, Friday, December 14, 1906 (Doctor of Dental Surgery as of the class of 1906): H. Barnett, G. J. Davies, C. J. Hart, W. E. Jones, L. C. Leaming, E. Wester.

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, AUGUST, 1907. No. 8

A CONSIDERATION OF GENERAL THERAPEUTICS AS APPLIED TO DENTISTRY.*

BY J. P. BUCKLEY, PH. G., D. D. S., CHICAGO, ILL.

Mr. President, Members of the Wisconsin State Dental Society, Ladies and Gentlemen—In calling your attention to a few drugs and medicines, and the combination of the same, which I have found useful in the practice of dentistry, I want to emphasize the pharmacy involved in the combination of these drugs, as well as their dental application.

The first prescription that you will notice on this line is one that is used for sensitive dentine.

℞ Menthol	gr. xx
Etheris	f℥ ss
Chloroformi	f℥ jss—M

Sig.—Use as directed.

Now, this prescription, which contains menthol, ether and chloroform, you will find in some cases, especially large cavities where you have sensitive dentine, that you get excellent results from it. This is not a remedy that you can use with gratifying results in all cases. I wish I had a remedy that I could give to you which you could seal within the tooth, or apply by some means, which would so obtund the dentine that you could prepare your cavity painlessly, without having the remedy act deleteriously upon the pulp. I am optimistic enough to believe that some one in the dental profession in the next few years will be able to give us such a remedy. At present I know of none. I know dentine can be obtunded by means of cocaine and pressure. I mean a remedy here that can be used for the purpose of obtunding sensitive dentine without acting deleteriously upon the pulp. This remedy depends for its action upon the volatility of the liquids in the preparation, ether and chloroform. No solid can turn to a liquid, or liquid to a gas, without abstracting a certain amount of heat from the thing to which it is applied. That is a law in physics. If you will dip a pledget of cotton in this solution and apply it before you have the rubber dam adjusted, or after, and go on getting out your instruments ready to break down the enamel and prepare the cavity, by the time you have the instruments ready the heat of the body will be sufficient to have volatilized the ether and chloroform in the remedy, and as those are volatilized a certain amount of heat is abstracted from the tooth, and the menthol is therefore driven a considerable distance into the dentine.

---

* Lecture delivered before the Wisconsin State Dental Society, July, 1906.

Now, I don't know whether you have all discarded arsenic or not. I believe arsenic has served us too well and too long to throw it away altogether. I presume most of you are removing pulps by means of cocaine and pressure; but if any of you are using arsenic because you haven't time to obtund the pulp and remove it by the newer method, or because of inaccessibility of the cavity, if you use arsenic for any purpose you will find the second prescription an excellent one for an arsenical paste.

℞ Arseni trioxidi	ʒ j
Cocainae hydrochloratis	gr. xx
Menthol	gr. v
Lanolini, q. s. to make a stiff paste.	

M. Sig.—Use the desired quantity.

Note—It is best to add lamp black to color preparation.

The latest revision of the pharmacopœia calls arsenic "arsenous trioxide." It has always spoken of the oxide, calling it arsenous acid. You will never see correctly written in a prescription, from now on, arsenous acid. You will find in this prescription arsenous oxide, or trioxide, cocaine hydrochlorate, menthol and lanolin. You will hear, all through what I have to say, a good deal about menthol, and drugs analagous to it. The action of this arsenical paste depends a great deal on the manner in which it is prepared. If you get in too much lanolin it will not act well. The idea you want to suggest to your pharmacist is this: The use of as small an amount of lanolin as possible to make a good paste out of the three powders. Menthol is a highly deliquescent substance, and there will be enough water in the menthol crystals to make almost a thin liquid out of the lanolin. That being true, you can make a paste out of the cocaine hydrochlorate a powder, and the arsenous tri-oxide, a white powder, by using very little lanolin. Menthol is added to that prescription largely for pharmacal reasons. Cocaine, as you know, is a local anesthetic. There is absolutely no use of putting morphine, in any form, in an arsenical preparation, because pharmacologists have demonstrated that morphine has no local action whatever. To get the action of morphine you must get it into the circulation and carry it to the brain, where its acts upon the central nervous system. While menthol has local anesthetic properties, it is not added to the arsenical paste because of that fact, as I have explained.

The next prescription is one which I have been using for some time.

℞ Menthol ....ʒ jss
Thymol ....ʒ ijss
Phenolis ....℥ j—M

Sig.—Use as directed.

I am glad to say, too, that this same pharmacopœia, which was revised in 1900, but the deliberations of which were only published last September, recognizes carbolic acid as phenol. It has never been an acid. It has only one property of an acid, and that is that with some metals it will form a carbolate. It is recognized now as phenol. This third prescription is thymol, menthol and phenol, added in various proportions. You do not need to be extra particular in getting these drugs in exactly the same proportion in order to have them act. There is somewhere a happy medium, it is true, but the addition or subtraction of a few grains, either way, will not destroy the efficacy of the remedy. I call your attention to that, because so many of these firms who are sending to our offices proprietary medicines are trying to make us believe they worked for months and years experimenting with these drugs and medicines, and finally, by some means known only to themselves, they happened to get a mixture which acts just so. There is absolutely nothing in it. This remedy you will find you can use as an anodyne in the roots of teeth from which you have removed the pulp, previous to filling the root, the pulp having been removed either by arsenic or cocaine. I do not know whether it has been your experience or not, but it is mine, that I have had more pericementitis following the removal of pulps by cocaine and pressure than I did when I used arsenic. There are reasons for that, which I cannot take the time to go into now. But anyway, when you remove a pulp, either by means of arsenic or cocaine, you have irritated more or less the tissue at the apical space, and you need an anodyne there. Phenol is not bad of itself, but much the best preparation is thymol, menthol and phenol. Thymol has been recognized by pharmacologists as having a peculiar action on animal tissue. They do not know just what it is, but it produces a good effect. That is the reason thymol is put into mumifying pastes.

The constituents of this preparation are penetrating drugs, and care must be taken to use only a small quantity. If asepsis has been maintained in removing the pulp, all that is necessary is to place dry cotton in the canal and a small pledget dipped into this remedy into the pulp chamber.

The next prescription is one suggested in the last issue of the *Cosmos.* It is phenol and thymol.

℞ Phenolis.
Thymol ....aa ℥ j—M

Sig.—Use as required.

Dr. Kirk has suggested the heating of the crystals of phenol, and when hot adding an equal amount of thymol. He recommends that in the same place as I recommend No. 3.

I do not know what this audience has been filling the roots of teeth with, but gutta-percha has served me well as a root canal filling; and if you use gutta-percha as a root canal filling it is well to moisten the sides of the canal, after it has been desiccated, as well as you can, with eucalyptol, or some other preparation, which is slightly solvent for the gutta-percha, making the gutta-percha hug the side of the root, and go to place, without curling up and coming back. I am speaking of the gutta-percha point. Eucalyptol is a constituent of oil of eucalyptus, and if any of you have used oil of eucalyptus as bought from the ordinary pharmacy, you have had a case of pericementitis ever time you filled a root, because there are constituents in the oil of eucalyptus that are irritating. Oil of eucalyptus has three constituents, the main one, eucalyptol, being the most volatile. The first one that distills is eucalyptol, because it is the most volatile constituent of the three. Eucalyptol is not nearly as irritating as the oil of eucalyptus. Still, it is slightly irritating, and if you use too much in moistening the canal you will still have slight soreness following the filling of the root. You can modify the irritating action of the eucalyptol, and at the same time add disinfectant properties, and get the peculiar action of thymol, by adding to the eucalyptol, menthol and thymol.

℞ Menthol	gr. iij
Thymol	gr. ij
Eucalyptol	fʒ j—M

Sig.—Use as directed.

Thymol is added because of its peculiar property. The menthol is for the purpose of modifying and allaying the irritating qualities of eucalyptol. If you put into the eucalyptol too much of these substances, thymol and menthol, you will find that you have interfered with the solvent action of the eucalyptol on gutta-percha. I experimented some time with that preparation and found that I could put in three grains of one and two of the other without destroying the solvent action. I have in this prescription thymol two grains, menthol three grains, eucalyptol one fluid dram. You can use that in cases where you moisten the root canal.

You can modify that preparation and get another one, which is excellent in cases of weeping abscess. Sometimes after you cauterize a fistula, and treat the root, you will have a weeping condition. You can check that secretion or weeping from the canal better by using another formula.

℞ Thymol	gr. x
Eucalyptol	fʒ j—M

Sig.—As indicated.

Here we do not care anything about the solvent action of the eucalyptol, and an excellent prescription to use there is ten grains of thymol to a dram of eucalyptol, leaving out the menthol.

I will have to curtail my remarks when I talk about remedies for treating putrescent pulps and abscesses, because, if I have a hobby that is it, and I do not wish to take up too much of your time. I come to the discussion of remedies to be used in treating putrescent pulps and abscesses with a great deal of satisfaction. Up to two or three or four years ago, remedies were selected for the purpose of treating putrescent pulps and abscesses solely and only because of the power or property those remedies possess for killing bacteria. Now, there are bacteria, lively ones, in a putrescent root canal; but if you have studied the process of pulp decomposition, if you have studied the decomposition of any dead animal tissue, and then the changes through which that tissue goes as it putrifies or ferments, you will find that substances form in the process which are obnoxious, and which must be taken into consideration in the treatment of putrescent pulps and abscesses, as much as micro-organisms. Animal tissue is composed of proteids, carbo-hydrates and fats. As the carbo-hydrates ferment you have formed, among other things, gases. The main gas is carbon dioxide. Now, there isn't much of the carbo-hydrates in pulp tissue; so in treating a putrescent pulp, or in trying to get rid of the intermediate products resulting from decomposition, you do not need to consider much CO_2. But the main constituent of animal tissue is proteids; and as these proteids putrify and undergo decomposition, among the first things produced is the liberation of a gas, hydrogen sulphide, H_2S. Other intermediate products, which form quite early in the putrefaction of proteid material are ptomains. Among those ptomaines have been discovered two deadly poisons, putrescine and cadaverine. These substances are formed as a result of the action of some bacteria on the proteid material. These two substances are capable of setting up inflammation, suppuration and necrosis. As these nitrogenous bases or ptomains are further putrefied you have, as a result of that further putrefaction, ammonia gas. Ammonia is slightly irritating, and if you confine those gases, among which we find carbon dioxide, hydrogen sulphide and ammonia, you are going to have trouble. As Dr. S. G. Perry of New York said, "I don't know what kind of gases they are, but I do know there is something there which if I confine in that putrescent canal, I am going to have trouble with." I believe these are the things that we find there. Now, you want to take into consideration the presence of these substances as well as the presence of micro-organisms. Instead of selecting bichloride of mercury, which is a good disinfectant, instead of selecting sublamine, which is a good disinfectant, for the purpose of treating these conditions, try to select substances which will take care of, and act upon chemically, if possible, these other substances besides the micro-organisms.

I must call your attention to one thing further in connection with decomposition. There is not much fat in the original pulp tissue. Dr. Harlan and some other of my friends think there is none. But it doesn't make any difference whether there is any original fat in the pulp tissue or not. Besides the ptomains, the hydrogen sulphide and ammonia, which are the end and intermediate products of putrefaction of the proteids, we have also, as an end product, fats. Every one of you, whether you know anything about chemistry, pathology, decomposition of animal tissue or not, know that you have removed from a pulp canal, time and again, a partially decomposed pulp, which, if you had cared to, and had placed it between your thumb and finger, you would have found it to be unctious; fatty in character. It resembles fat, looks like fat, and some of it is fat—as the story goes. Now, then, it is well to take into consideration the presence of fat in a putrescent root canal in treating this condition, even though we cannot prove chemically that fat is an original constituent of the pulp tissue. In the journals, some years ago, formalin, a 40% solution of formaldehyde, was recommended. We got too many sore teeth, and then we used 20%. Then they got it down finally to a 2% solution, oftentimes still sore teeth. Again we saw in the journals the suggestion that you can use equal parts of creosote and formalin as a good remedy in the treatment of putrescent pulps. If any of you have tried to mix beechwood creosote and formalin you have found that they don't mix. They will not make a chemically clear solution (illustrating). Now, I can clear this solution by heating it, but as soon as it gets down to the normal temperature it will get milky again. I like everything clear and colorless. You can clear the solution, however, by adding alcohol to it. The alcohol is only used for the purpose of clearing up the solution. You can clear up the solution by taking ten minims of the alcohol to every dram of the formalin and creosote.

℞ Creosoti.
Formalini ....aa fʒ j
Alcoholis ....m xx—M
Sig.—Use as directed.

Now this is a remedy which you can buy of the man who comes in your office at 75c for half an ounce. You can mix it yourself, and get it for 3c. If it wasn't for the fats that resulted from the decomposition of that pulp, and other reasons which I will mention later on, that remedy would be good. You can put it into the pulp chamber, no matter how putrescent it is, and seal the cavity with cement. That is the beauty of it. Any remedy that you can seal absolutely at the first sitting is a good remedy, because you prevent the remedy from getting out into the mouth of the patient, and his tasting it as long as you are treating that tooth; and you prevent the saliva, laden with bacteria, from getting into the cavity of the tooth. You can do that by using this first remedy. But, creosote will not act upon the fats to the same extent as some other agents. Now, tri-cresol was a remedy used by Drs. McWhinney and Cook, of Chicago, a great deal in the practice of dentistry. Tri-cresol is now recognized by the pharmacopœia as "cresol." Cresol and formalin, equal parts, a remedy suggested by myself, is a far better remedy to be used in the treatment of putrescent pulps and blind abscesses than is creosote, formalin and alcohol, for many reasons.

℞ Cresolis.
Formalini ....aa f℥ j—M

Sig.—Use as suggested.

You think they will not mix at first, but by simply shaking the container (illustrating), it will make a nice clear solution, without the addition of alcohol or the use of heat. Phenol (carbolic acid) is a better disinfectant than creosote. Cresol has been proven to be three times as good a disinfectant as is phenol; so cresol is preferable to creosote as a disinfectant. Cresol acts to advantage upon the fats which are an end-product of decomposition of the pulp, and as a result of that action of cresol upon the fats, we have produced something analagous to lysol, a good disinfectant. Cresol modifies the irritating action of the formaldehyde, which is constantly generated from the solution. Now we have learned three or four reasons why cresol is better than creosote, and is better than phenol. Phenol and formalin will mix in all proportions, and is not a bad remedy. Cresol and formalin is better, as I have explained. That remedy can also be hermetically sealed in the tooth.

If I thought that I was justified in going into the technique of how to apply it I would be glad to do so, but I do not believe, it having been before the profession three or four years, that I would be justified in taking up the time of this society to do that. I will hurry over the technique by saying you must do two things—or one thing, and not another. You must have the pulp chamber exposed, or opened into freely enough to expose all the pulp canals, so that the remedy will act upon the contents therein. If you do not, the tooth will ache. If you freely expose the pulp chamber and seal in the remedy it will not ache—if the canals are all exposed. That is one thing you must do, expose all the canals to the action of the remedy. Secondly, you must seal that in hermetically, without pressure. Now it is difficult to seal in a large occlusal cavity, hermetically, any remedy without producing pressure, when stopping or gutta-percha is used, and if you succeed in doing that, and the patient forgets and bites on that side, the filling will give and you will have trouble. You can seal the remedy better with cement. I will simply say, the worse odor you have in that root the better your remedy will act. You do not need to lose any sleep because you put in a cement filling and sealed the remedy over the putrescent canal. I want to tell you why—you can seal that remedy, hermetically, too. We have briefly—perhaps too briefly—figured out the end products which result from the decomposition of the pulp. It is the gases which cause the trouble—I mean, as far as hermetically sealing the tooth is concerned. Your remedy must kill the gases, if I may put it that way. Now in chemistry we all know that when ammonia and chlorin, two gases, come in contact with each other, they unite freely, and as a result a solid is produced. Now here the gas that comes from our remedy is formaldehyde, CH_2O, and it comes in contact first, we will say, with the ammonia, also a gas, in the putrescent canal.

First Reaction—$6\ CH_2O + 4\ NH_3 = (CH_2)_6N_4 + 6\ H_2O$.

The two gases unite, forming urotropin, a solid; that is, not only a solid, but a substance used in medicine for the purpose of disinfecting the urinary tract. Perhaps it would not be bad to leave it in there, in the tubuli of the tooth.

Second Reaction—$2\ CH_2O + 2\ H_2S = 2\ CH_3OH + S_2$.

Your formaldehyde gas will also unite with H_2S.

One gas coming in contact with another, forming a liquid. In the first reaction you have a solid; in the second reaction a liquid; the solid formed as a result of the action of formaldehyde upon the ammonia. The liquid as a result of formaldehyde acting upon the H_2S. If you take care of the gases chemically, if you kill them, as it were, or if the gases unite to produce a solid and a liquid, you know you do not need to worry, and we can hermetically seal these remedies in the roots of teeth containing putrescent material.

Some object to the odor; not very many, because the result is so beautiful that you forget the odor. I do not like the odor of creosote myself; cresol has about as bad an odor. If you object to the odor of creosote you can use this remedy that I suggested to be sealed in the canal from which you have removed a live pulp, as an anodyne, thymol, menthol and phenol.

℞ Pheno-mentho-theymol.
Formalini .... aa fʒ j—M

Sig.—Use as indicated.

It, too, will mix with formalin in all proportions. You see (indicating) it is a beautiful colorless liquid, making a clear pharmacal product. It, however, will not act upon the fats to the same advantage as will your cresol. Now, here is a remedy which contains phenol, thymol, menthol and formaldehyde, which you can seal in any putrescent canal—an excellent remedy to use; but from a chemical point of view it will not dispose of the fats which are formed.

I want to call your attention again to No. 3. When you have a fistula established, and you want to cauterize it, instead of using phenol you will find that you get equally as good results with a much better remedy by using pheno-mentho-thymol.

Now I am going to hurry along. Mr. Chairman, you will pardon me, I trust because I am taking up so much of your time. I am sorry I have to do it, but it seems to be necessary.

℞ Acetanilidi .... gr. viij
Syrupi simplex .... f℥ ss
Spiritus frumenti .... f℥ ijss—M

Sig.—Take one-half at once and the remainder in one hour if required.

Here we have a remedy which you can use in cases of facial neuralgia, or in those cases where you have an incipient abscess; where you have used your local treatment, but until your local treatment is going to take care of those gases in the tooth you know it will ache for an hour, or five or six hours. You can control that pain by giving a general hypnotic. One of the best is acetanilid. Acetanilid, while it is a hypnotic, while it acts upon the central nervous system, is a heart depressor. But you can overcome its depressant and get its analgesic action if you combine a heart stimulant. Here we have whisky, a cardiac stimulant, to overcome the depressant effects of acetanilid. The pharmacopœia has tried to introduce something to take the place of so many proprietary remedies, the formula of which we do not know. I do not believe we ought to use anything, especially internally, that we do not know the constituents of the mixture, and know the properties of the various constituents. To offset that rapid influx of proprietary remedies in medicine, the pharmacopoeia has introduced a "compound powder of acetanilid

Acetanilid	70 parts
Caffeine	10 parts
Sodium bicarbonate	20 parts

Caffeine is added here for the same purpose that the whisky is added in this one (No. 10) to overcome the depressant action of the acetanilid.

In writing a prescription for any pharmaceutical preparation or official preparation, you never have to include in that prescription all of the constituents. All you have to do is to write a prescription for the official name, which is here "compound acetanilid powder."

℞ Pulvis acetanilidi comp. . . . . gr. xv
Ft chartulae No. 2.

Sig.—Take one at once and the other in an hour if not relieved.

In prescribing these general hypnotics many are prone to believe that we do not know enough about drugs and medicines to prescribe them, no matter whether the trouble is of dental origin or not, and we would be criticised, if we had a fatality, much more than a physician. To obviate, perhaps, the possibility of that criticism, in prescribing the hypnotic drugs it is best, for dentists especially—it isn't a bad thing for physicians—to not prescribe for more than perhaps will be enough to produce the desired result. Do not prescribe for such an amount as would perhaps kill the patients if they were to take it all. Sometimes these patients having neuralgia will ignore your directions, and they will take one powder right after another, if they think they will get ultimately good results, without waiting for the action of the first powder. It takes some little time to get it into the circulation. They will take one right after another, and the drug may have accumulated with a toxic result. Prescribe then for four doses, or perhaps no more than two.

℞ Zinci iodidi	gr. xv
Aquae	m. x
Iodi (crys.)	gr. xxv
Gylcerini q. s. ad	ʒ j—M

Sig.—Use where indicated.

Here is a remedy that you will get beautiful results from in treating pyorrhea. That is zinc iodide; water, iodine and glycerine. This remedy was worked out for Dr. Talbot by C. N. S. Halberg, professor of pharmacy of the Illinois University. This remedy you will apply after having scaled the roots, especially in cases of flabby gums, where acid is not indicated. Apply in the pocket and over the septum of the gum. You will find that the gum will shrink and hug the neck of the tooth more readily than with any other remedy. A man by the name of Lugol some years ago discovered a chemical fact that if he would make a solution of potassium iodide in water he could dissolve iodine to the extent of five per cent. Halberg has taken advantage of that pharmaceutical fact. He has taken the zinc iodide, which is a highly deliquescent substance, and added enough water to liquify. Ten minims will more than liquify the 15 grains of zinc iodide; and then to that he has added 25 grains of the crystal iodine and made a nice creamy mixture by adding glycerine, only as a vehicle. Talbot wanted a solution of iodine in glycerine to which some astringent had been added. That is not quite Talbot's formula; it is practically the same. I have modified it some.

℞ Phenolis.
Acidi sulphurici ....aa ℥ j
Aquae ....f℥ ij—M
Sig.—As directed.

Phenol-sulphonic acid, 50%. If you have an abscess where the pus has stood in contact with the root until it has been absorbed, or the end is rough, and you do not expect to cure the abscess by forcing through that process phenol, you ought to cure that case by forcing phenol-sulphonic acid through. Where the pus has stood in contact with the root until you have quite a considerable area of peridental membrane destroyed, and perhaps the end of the root, and a roughened edge of either process or root, there you have either to cut off the end of the root, or accomplish the same thing by the use of an acid. Several acids have been suggested, but one of the best acids to use under those circumstances, as well also as in a pyorrhea pocket, when medicated, is phenol sulphonic acid, made by taking equal parts of phenol and sulphuric acid; chemically pure phenol and chemically pure sulphuric acid. A great many tell you that you can make this preparation by taking phenol and sulphuric acid in equal parts, and then if you want to get the 50% (which is generally used—in pyorrhea pockets you ought not to use over 25%)—they tell you, you can dilute that original phenol-sulphonic acid mixture with water. It cannot be done unless you again know something about pharmacy, or chemical laws and their application to practical pharmacy. You can mix, however, the phenol and sulphuric acid and make a nice clear solution. Ordinary 95% phenol and sulphuric acid, chemically pure, will make a nice clear solution; taken in equal parts (illustrating). If you take the crystals of phenol and heat them in an evaporating dish, and add sulphuric acid, you will get phenol sulphonic acid in a clear solution. Also if you want to make a 50% solution, or the 25%, you cannot get it by simply adding water, because you separate your phenol. Now, after I have added the phenol and sulphuric acid, granting that I had a clear solution, and then the water, I can heat that solution all day—I don't know whether I could or not, but I have heated it five or ten minutes, and perhaps half an hour—without making that phenol go back into solution. But you can overcome that if you will make this preparation in the following manner, and that is what I want to illustrate. If you will take 95% phenol and heat it nearly to boiling, then while hot add as much sulphuric acid as you have taken of the phenol, then to that mixture, while still hot, you add your 50% of water, there you have made a 50% solution of phenol sulphonic acid; and you have got a good clear solution without precipitating or re-precipitating the phenol.

When you apply phenol sulphonic acid to a root canal for the purpose of cauterizing a fistulous tract, and at the same time smoothing up the rough edges of the processes or end of the root, you must not apply it to the canal on cotton. It will make a mush, and be difficult to handle. You want to apply this remedy to the canal on threads of asbestos, or silk. With your unvulcanized red rubber you make a plunger, having the alcohol ready to cauterize the mouth of the fistula as it passes through, or having a little blotting paper with an opening over the mouth of fistula, dipped in vaseline, letting the oil neutralize the acid as it passes through.

The next prescription is a good mouth wash.

℞ Sodii bicarbonatis.	
Sodii boratis	aa ʒ j
Zinci chloridi	gr. vj
Menthol	aa gr. j
Alcoholis	ʒ ij
Glycerini	ʒ iv
Aquae cinnamoni	q. s. ad f. Oj—M

Sig.—Use as directed.

If you want an astringent, you will find that an excellent one; one that your patients will like, and one you will like.

I want to caution you against having your patients use mouth washes too frequently, when they do not need them. Dr. Cook has found that the constant use of some of these mouth washes on the market interferes for hours with the action of pepsin on the starchy foods. So this matter of having patients use antiseptic mouth washes daily, when a saline solution, or simply water, will accomplish the same result, is wrong. If you want to hold in abeyance, however, the micro-organisms in the mouth, you must use some mouth wash. You can use this one with excellent results. Now, the pharmacopœia here, like in the case of so many of these hypnotic headache preparations, to overcome the gradual influx of mouth washes, has introduced in the last edition an official mouth-wash, which is shown over here, U. S. P. formula:

Boric acid	20 gm.
Benzoic acid	1 gm.
Thymol	1 gm.
Eucalyptol	0.25 cc.
Oil peppermint	0.50 cc.
Oil of gaultheria	0.25 cc.
Oil of thyme	0.10 cc.
Alcohol	250.00 cc.
Water, to make	1,000.00 cc.

When you want to write for a mouth wash all you need to do—instead of acting like parrots, instead of signing your name on a line with "D. D. S." at the end, on a so-called blank prescription for the proprietary mouth washes—instead of doing that you can let the public know that you know enough about drugs and medicines to write an intelligent prescription for a mouth wash that is a counterpart of, or better than any proprietary mouth wash on the market today. You can write for that solution. You do not need to write "boric acid, thymol, benzoic acid," etc.—you do not need to write them all out. You can simply write the official name:

℞ Liquoris antisepticus ....f℥ viij
Sig.—Dilute with one-half water and thoroughly rinse mouth, as directed.

That shows much more intelligence on your part than to sign your name to these blanks, which are so freely furnished for the miscellaneous use of these proprietary mouth washes. You do not even need to remember the exact constituents of that mouth wash. You can easily remember, however, that this mouth wash contains 2% of boric acid, one-tenth per cent of thymol and benzoic acid; 25% of alcohol, and other aromatics and antiseptics in an aqueous solution.

℞ Orthoform.
Europhen ....aa ʒ j
Liquidi petrolati q. s. to make a paste. —M
Sig.—As directed.

The next one, No. 18, you will get much benefit from, especially country dentists, where you have to do a great deal of extracting in allaying the pain after the extraction; if you have separated the process, or if the process is attached to the cementum of the root; or if you have had to go down and expose the process more or less; in any of those conditions from which you have severe pain you can stop that pain, almost like magic, by its use. Now, it is claimed by some that orthoform is a disinfectant. It is not a good disinfectant, but is an excellent local anesthetic. You can prolong the anesthetic effect if you add europhen. Europhen is a substitute for iodoform. It is an insoluble product which, when it comes in contact with water, gradually gives off iodine. Combining these two, and adding to that liquid vaseline, it makes an oily paste. After drying the exposed part apply the oleagenous paste, and you can control the pain. You do not need to be afraid; if the patient lives in the country and cannot come in handily, and you think the pain will not stop by the time the anesthetic effect has passed away, you can give them some of the paste and let them apply it themselves. It must be applied to an abraided surface.

The next is a prescription for local anesthesia. It contains cocaine hydrochlorate, as a local anesthetic, phenol for the purpose of keeping the solution sterile, and peppermint water as a vehicle. The phenol is added two minims to the ounce, which is a little less than one-half of one per cent. It is enough, with the peppermint water, to keep the solution sterile. You can inject phenol into the tissue to the extent of one per cent without any perceptible coagulating action of the phenol on the albumen. Here we have less than one-half of one per cent. The peppermint will mask the bitter taste of the cocaine hydrochlorate.

℞ Cocainae hydrochloratis	gr. vj
Phenolis	m. ij
Aquae menthae piperitae	f℥ j—M

Sig.—Use as a local anesthetic.

Note.—¼ gr. of cocaine is contained in every 19 minims of the solution.

I have taken up a great deal of your time, and I appreciate fully the interest that you have shown this warm afternoon. I will feel well repaid if in my rambling remarks here I have succeeded in convincing this audience that what we need in dentsitry today more than the rapid influx of these proprietary remedies, the constituents of which we do not know, is a broader knowledge of pathology and a broader knowledge of drugs and medicines. I thank you.

REPORT OF COMMITTEE ON DENTAL SCIENCE AND LITERATURE.*

BY GEO. W. COOK, D. D. S., CHICAGO.

It would be quite impossible for a chairman to give a resume of all the magazine articles published during the last year, to say nothing of the whole books and the translations that have appeared on the subject of dentistry. Furthermore, it is quite impossible to classify the articles that we can call scientific and those designated as practical. Most of the articles that appear in journal publications at the present time contain suggestions very excellent in the practice of our profession. In reviewing a great number of journal articles we are forcibly struck with one fact: that the majority of individuals who write for societies and for general publication are by no means very familiar with the previous publications upon the same subjects, and, in most instances, absolutely ignore them. This in itself takes away from the true value of what they may have to say. We as a profession are old enough, and our published articles are of sufficient value, so that we should feel obliged before sitting down to write, to review the thoughts of the authors who have previously written upon the same subject. The modern writer apparently tries to leave the readers with the idea that he is the only one who has thought upon certain phases of the questions under consideration. The old adage, "There is nothing new under the sun," is just as applicable to our calling as to that of any other.

---

*Read before the Illinois State Dental Society, May, 1907.

If we were to attempt to point out all of the valuable articles that have been published in the last year, both from the artistic and scientific side of our calling, we should have to extend this report to such a length that it would be impossible for it to be read or published.

The articles appearing on the filling of teeth with gold, amalgam, and cement have dropped off in number. Very few contributions have been made on the use of amalgam as a filling material. The published contributions on the use of gold in the filling of teeth have assumed rather the gold inlay phase than that former one of packing gold into cavities known as gold fillings. However, there has appeared one article on "The Use of Gold in the Filling of Teeth," by Dr. L. S. Tenney, of Chicago, in which the author has given a few experiments with gold, recording the specific gravity reached by hand pressure, light malleting, medium malleting, and heavy malleting. This article seems to be a very useful one for those who are still filling teeth with gold in the ordinary manner. There is another very excellent article by Dr. John R. Calahan, of Cincinnati, on "The Herbst Burnisher." Any one interested in this phase of operative dentistry should not fail to see Dr. Calahan's article. Dr. M. L. Ward has given an excellent article on "The Treatment of Gold Foil by Heat." Dr. G. L. Noel has also contributed an article entitled "A Plea for the More Extensive Use of Non-Cohesive Gold." These published articles just mentioned and the discussions on them cover practically all that has been written on gold as a filling material in dentistry.

Dr. Thomas P. Hinman has contributed a series of articles, entitled "Methods of Filling of Teeth with Gold Inlays." Any one who is interested in this phase of operative dentistry cannot fail to obtain some very valuable information on this subject by reading these articles. Dr. J. W. Lyons has contributed an excellent article on "Gold Inlays," which is worthy a careful review. Dr. W. B. Dills has also contributed an interesting article on the same subject. There are many other theses on gold inlays that would be of benefit to any one to study with more care than one can give them here. It seems from a study of the recent articles on gold as a filling material that we are passing from the stage of operations in filling teeth with gold fillings to that of gold inlays. In 1902-3 we had some twenty-odd papers well written and of splendid application on the subject of gold fillings, while this year gives us only about one-third as many papers applied to gold foil operations. It seems, judging from the papers that I have gone through, that those who have of late written on gold fillings have done so with far greater descriptive powers than they had a few years ago, and I must say with far more care than is devoted to any other class of papers. Why such should be the case is more than I can tell. There is a paper written by A. M. Lewis, entitled "Strange Phases Against Extension for Prevention," which to my mind elucidates some of the problems underlying the principles of cavity preparation, and which is worthy of the highest commendation. We are also confronting, in filling teeth with gold, developments that seem destined to revolutionize the process. The most important of these is that of the cast gold inlay, the principles of which were laid down in a paper by W. H. Taggart, read before the New York Odontological Society.

On the subject of porcelain inlays some twelve articles have appeared in the periodicals. In the analysis of this branch of operative dentistry, as interpreted from the writings upon the subject, one is struck by the lack of system in cavity preparation. It would seem from these articles that those who are interested in porcelain art should systematize the technology and become more conversant with their material, and teach in their papers a more systematic method of cavity preparation. There seems to be a tendency for each one to see how completely he can ignore the valuable work done by his colleagues in this department. The papers on the subject of porcelain are filled with a lot of phrases: "I get results, that is all I know about the subject," or expressions quite similar. This one thing is sure, perhaps due to long years of training, that the men who write on gold fillings and the technology of that subject, have a power of describing their methods and principles that excels that manifested in any other descriptive writings upon the art of dentistry. Another serious objection that one finds in the papers that are published upon the subject of porcelain art is this: You can nearly always tell from the writing, without the name of the author appearing at all, whether he is a high or low fusing porcelain worker, and what class of manufactures he is most wedded to. It is extremely interesting to study carefully the writings upon this subject. There has been a falling off in the number of articles, but they are of a better class of descriptive writing. There have not been so many dogmatic statements made as in the previous years, therefore it would seem that this phase of practice is assuming a more rational basis, and that porcelain will soon assume a true and valuable place in operative procedures.

The published articles on prosthetic dentistry are very few, so few that I am almost ashamed to speak of this department of dentistry in connection with the art and science that we, as a profession, are dealing with. One of the most notable papers upon this subject is by Charles R. Turner, the substance of which is "Prosthetic Dentistry as an Applied Science." This paper is classical in this line and deserves the highest commendation from all who have any regard for prosthesis. Dr. Hart J. Goslee has written an admirable paper on "Prosthesis," and he has shown that this branch, barring that part known as crown and bridge work, has not advanced in the last twenty-five years. This, then, leaves artificial dentures with but few enthusiasts. But, judging from the full sets of teeth that are sold in the dental supply houses and the large manufacture of artificial teeth by the various dental laboratories in large cities, prosthetic dentistry is being made use of almost as extensively as it has been any time in the past. Dr. B. J. Cigrand has given several contributions on prosthetic dentistry.

The subject of crown and bridge work has been quite extensively discussed, but not with the same enthusiasm as in previous years The articles that have appeared on crown and bridge work in the last year have been along the line of gold inlays for anchorage, rather than upon the use of crowns as abutments. As to the value of t method of attachment, it is a phase of the subject that is yet to be borne out by practical experience.

In the field of orthodontia many valuable papers have appeared. Case, Angle, and a number of others have demonstrated that this specialty of dentistry has assumed a position that places it among the scientific problems of practicing dentists. In almost every large city of the United States there are now a number of individuals who are practicing this specialty exclusively. Great credit is due the writers in this particular field, inasmuch as they give the greatest detail to the preparation of their articles. The nomenclature of this specialty has developed to a wonderful perfection. The younger men who have established themselves in this class of work are beyond question students of the very highest attainments. It seems from general appearance that within the next twenty-five years orthodontia will be classed as among the leading specialties in dentistry.

The branch of Materia Medica and therapeutics has not received so much attention this year, according to the published articles, as in previous years. With but a few exceptions, we have little to recommend as new principles, thoughts, or ideas upon this subject. The majority of articles that have appeared have been largely a continuation of the study that has previously been published. In this line Harlan, Buckley and Prinz are the principal authors this year who have given anything like a study and application of new thoughts or discussions.

Under the head of "Science and Investigation" Noyes, Black, and Hopewell Smith have all contributed to this branch of our literature. The last named author has given us a very valuable paper, entitled "Study of the Vascular Lesions of the Dental Pulp—Their Complications and Clinical Significance." This paper is of unusual value to every practitioner of dentistry. Dr. G. V. Black has contributed an article, the title of which is "Studies of the Beginning of Caries in Enamel With Reference to the Filling of Teeth." This like many of the articles by the same author, is one of the valuable contributions to the scientific treatment of this phase of pathology, and deserves the thoughtful and careful consideration of all who are practicing the filling of teeth by any method that we have at the present time. Another article that deserves special mention here is by Dr. Henry Banzhaf, entitled "The Sterilization of Water and Instruments." The treatment of this subject at the hands of the author has been accomplished purely by experimental methods. There are a series of articles by W. D. Miller, of Berlin, on "Erosion of Teeth," which are very valuable contributions on this subject. Drs. Hinkins and Acree have done some splendid scientific work, and when we consider research, this is the class of work that will eventually bring results.

Oral surgery has not had any extensive treatise, with special reference to operations in the oral cavity, that is strictly classed as surgical. A few cases have been reported that are of more or less interest to the profession, but this branch of dentistry has not had the contributions that it justly deserves. With the great number of surgical operations in the mouth, we are at a loss to know why more interesting discussions are not contributed to this subject. Drs. Gilmer, Brophy and many others whom we might mention are daily performing operations in the mouth that ought to be more fully described and given to the profession in published articles.

Under the heads of "Dental Ethics," "College Education" and "State Board of Dental Examiners," a number of articles and editorials have appeared in the last year that deserve the careful study of every dentist who is in any way interested in the upbuilding of his profession. Drs. Kirk and Johnson have contributed some splendid editorials on dental education and ethics in dentistry. The papers that have treated of dental education have been varied and are more or less miscellaneous in character. After reviewing the literature on dental education and its relations to the State Board of Dental Examiners, we are forced to the conclusion that there is a broad difference between what the college teachers and what the state boards consider dental education. This is a subject that has involved the discussion of the problems of dental education, without having come to any conclusion with reference to what shall constitute a fit candidate for the practice of dentistry.

In giving a brief synopsis of the publications of the last year, I do so with a feeling that the subject is so broad and involves so many phases of the profession that it is quite impossible to treat it with the broad analysis that it justly deserves. Time and space forbid that we should in any way give an analytic study of the science and literature of dentistry as it is today. Suffice it to say, that in making a comparative study of the published articles we are forced to one conclusion: that in some branches the articles appear well and thoughtfully prepared, while others involve a lot of discussions without giving the subject the logical determination that they should give. The text books that are of special interest we shall review later.

I have reviewed the second edition of B. Walter Gilbert's book on dental porcelain. This is a splendid little book. While it states in the outset that it is a treatise for beginners, still if one is interested in this class of work the book contains much that might be of great benefit. Most of the contents are of the very best principles underlying the use of porcelain, therefore I can fully recommend it for both beginners and practitioners.

The American Text Book of Prosthetic Dentistry, edited by Charles R. Turner, has just been issued in a third edition. This book contains a large amount of material of the best thoughts on the various phases of this special field of dentistry. Each author in the book has tried, with a great deal of success, to place his particular subject in the best possible manner, and with the latest thoughts and ideas pertaining to that particular phase of prosthesis. While the book is rather large and somewhat unhandy for the college student, still it is in a class all by itself and gives a splendid opportunity for the general practitioner to become better informed on this special line of dentistry, and any one who is writing or practicing cannot fail to derive a great benefit from it.

An atlas and text book of dentistry including diseases of the mouth has been issued in the last year by Saunders & Company. The author of this book is Gustav Preiswerk, of the University of Basle, and it is translated by George W. Warren. This book is full of the very best material, accompanied with splendid cuts that illustrate in the most admirable manner certain diseases and conditions that come under the head of oral diseases of the teeth, jaws and mouth. There is not so much new in the book, but it brings up some of the older phases of the subject in a most interesting manner. There are many things that could be objected to, as it does not contain the fullest explanation along certain lines. But if one is looking for information he could not fail to get assistance from a careful study of the book. The translation of the work has been so well done that too much praise cannot be given Dr. Warren for his faithfulness and skill in the interpretation. I can truly recommend it to every thoughtful and conscientious student of dentistry.

"Dental Formulary" is the title of the book that has recently been brought out by Dr. Hermann Prinz. This little book contains so much of value to the general practitioner, as well as to the dental student, that I should like very much to give a more extended review of the work. The author is well known for his painstaking manner of doing things, and has given us something that cannot fail to be of value to all who are interested in therapeutics in any way. This is a highly commendable work and deserves the consideration of every teacher and practitioner.

"The Advancement of Prosthetic Dentistry Within the Past Quarter Century.' By Hart J. Goslee. *Items of Interest,* April, 1907.

"The Regeneration of Dental Prosthesis." By A. DeWitt Gritman. *Dental Cosmos,* August, 1906.

"The Professional Rank of Prosthodontia." By N. S. Hoff, *Dental Digest,* July, 1906.

"Prosthodontia Attacked and Defended." By R. Ottolengui. *Items of Interest,* November, 1906.

"A Year's Progress in Porcelain Prosthesis." By N. S. Jenkins. DENTAL REVIEW, December, 1906.

"Evolution and Decay of the Tooth-brush." By J. S. Junkerman. DENTAL REVIEW, October, 1906.

"Gold Inlay." By J. W. Lyons. *Dental Digest,* November, 1906.

"Malocclusion of the Teeth and Its Intimate Relations to Carious Conditions." By F. E. Williams. *Dental Digest,* October, 1906.

"Why I Use Porcelain." By Craig C. Work. *Dental Digest,* March, 1906.

"Experiment in Plate Adaptation." By Stewart J. Spence. *Dental Digest,* March, 1906.

"A Comparison of Beginning and Burrowing Caries." By F. B. Noyes. DENTAL REVIEW, May, 1906. This is a splendid pathologic study of caries.

"Malocclusion." By Wm. G. Law. DENTAL REVIEW, January, 1907.

"Acute Ulcerous Gingivitis." By Thomas L. Gilmer, DENTAL REVIEW, May, 1906.

THE DENTIST OF TOMORROW.*

BY DR. JAMES WILSON CORMANY, MT. CARROLL, ILL.

Some years ago, and on several occasions, it has been my privilege to read papers before the Northern Illinois Dental Society on subjects along similar lines of thought, and they were received so kindly that the program committee saw fit to invite me to give a paper for your consideration.

It is needless to say that this paper will be thoroughly optimistic, and I trust will also be encouraging to the least, as well as the most distressed. I come before you with a history along the much-talked-of New Thought lines.

---

*Read before the Illinois State Dental Society, May, 1907.

I will say at the start that I did not come into this willingly, for my first impressions were anything but pleasing, and I resented everything that pertained to "As a man thinketh in his heart so is he," and that thoughts must be first entertained in the mind as an ideal before they could be made manifest as things, and it is our desires that become our necessities. A certain thing is first suggested, then entertained, then investigated, then desired, then necessary.

It was in eighteen hundred and ninety-eight that I first became interested in this new light in which we see the same old things, and the subject became so intensely entertaining that I made a special trip to Boston to be under the tutelage of a learned man from England. Before I left home, I said one week would be enough of that, but I was there four. After taking this course of lessons, and having tried the instructions on myself with marked effect, I wrote a little paper for the Northern Illinois Dental Society entitled "Success." This paper was published in the DENTAL REVIEW and a dentist in Denver, Colorado, wrote me for help. He formerly lived in Kentucky and was stricken with nervous prostration. His physician sent him to Denver. He opened an office there and practiced for about two or three months. Down he went, and it was at this time he wrote me. "Now," I said, "here is my opportunity." Willingly he took up with what I had to give him and by correspondence only, he rapidly recovered so that in three months he was back in his office, a well, happy, healthy, hearty man. His letters were full of gratitude and thanks for the manifold blessings I was instrumental in bringing to him. I have never seen him. This is only one of many. If such results can be obtained many miles away from the source of supply, what may I hope to accomplish among those who are here today?

In the Declaration of Independence it says: "These United States are and of right ought to be free and independent," and it was seven years afterward that the treaty was signed. You see they made the statement: "These United States *are* free and independent." This is what we call nowadays an affirmation. It is this, I am free and independent, that the dentist of tomorrow affirms that makes him the dentist which he expects to be. I do not wish to set up any false ideals, only such as have been proven in my own life.

We all possess various endowments and live in different environment, and do not think that one individual's aspirations equals another's perspiration. And further, remember there are two voices sounding in your ears—one of fear, the other of confidence. To which one will you take heed? It is our ignorance that holds us down. We have neither the time, the energy, nor the disposition to discover the real meaning and aim of life, because all our capacity of acting, operating, or producing an effect is absorbed in the bare maintenance of existence. If you never learn to demonstrate the power of thought, you will continue in ignorance. It is not fair to set oneself up as the great know-all. I have lived long enough (and I think I have been a good observer of things generally) to learn this much, not to say such and such an one is off in his upper story to advocate such things. Just wait awhile, my friends, and you will see like the rest of us. Get a firm mental grasp on yourselves, turn your telescopes around and see yourselves as big in your own estimation, at least, and it will not be long until others will think of you the same. I do not mean egotism, swell-head, or any of those things. Surely, if we do not think well of ourselves, no one else will.

I can see the dentist of today taking up with the idea, I am just what I think I am. I am the dentist of tomorrow today, the recognized professional gentleman of the world. I am not the E. Z. mark for all the swindling schemes floating around. I am inferior to none, as far as the practice of my profession is concerned in my own locality, and I am the city dentist practicing in the country, with all the conveniences the city dentist enjoys and many more. I can draw a natural breath without going into hiding to do it.

It is the mental attitude that makes for health and happiness in physical or financial conditions. The winds of March are not our enemies—it is the fear we hold that causes the trouble. Do you think for an instant they were sent to injure us? No, God does not send them for that purpose. Just so long as you keep in wretched material or poverty vibrations, you miss health, cheerfulness, and opulence. It is the law of attraction that rules. Good thoughts make well, bad thoughts make sick. As Charles B. Newcomb puts it: "These are metaphysical concepts, not tangible things, but they are causes that lead to tangible results?"

"The dentist of tomorrow will do his work without anxiety, because of years of gathering strength, not only from others, but also from his own experience. He will not settle in the town where he was born and have it said by the old "timers" "that's Bill Jones' boy. I've known him since he was a baby." He will establish himself in a new city where all are strangers to each other, and be considered a man among men. He will take the direction in which he can safely move forward. He will enjoy the blessed privilege of locating in whatever state he desires, for reciprocity will be the law.

He will not believe all he hears at dental societies. He will be full of mental and moral encouragement. It will be his constant aim and endeavor to preserve the natural teeth, and his fee will be commensurate with his services. He will be a happy, cheerful, contented man, made so by his thoughts and affirmations. His home will be in some salubrious climate, owning an orange grove that will bring him an assured income, sitting under his own vine and fig tree. Do not be discouraged if all these do not materialize in a day. I can assure you health, happiness, prosperity, if you will hold to the thoughts contained in this paper. You will be the dentist of tomorrow, and as you stroll over your possessions in the early morn, and see the sun coming up from behind the foothills, you will strike yourselves on the breast and exclaim with the prophet of old, "Oh, king, live forever!"

SOME PRINCIPLES RELATIVE TO PRESERVATION VS. EXTRACTION OF DECIDUOUS AND PERMANENT TEETH.*

BY C. S. CASE, M. D., D. D. S., CHICAGO, ILL.

In casting about for a subject upon which to write a short essay that will be of interest to the general practitioner and one which may prove to be instructive in the discussion that may follow, I have finally chosen a subject upon which much experience has taught me to be a phase of dentistry in which the errors of judgment are so frequent and so serious, even in the practice of dentists who are otherwise skilled, that it would seem that there was either a general lack of scientific knowledge along this line, or a thoughtless disregard of principle which nature has so evidently considered of the greatest importance in the development of a wonderful system of dentition, which no thinking mind can contemplate without amazement and admiration.

---

*Read before the Odontological Society of Chicago, January, 1907.

The subject of this paper relates to the baleful influences and results which naturally follow the injudicious and unnecessary extraction of deciduous and permanent teeth. This is a subject which in a single society paper, I fell I can do but scant justice to, in the way of reciting and illustrating with casts the records of numberless cases to prove the above strong statement.

It is a subject moreover which reaches into so many phases of dental and dento-facial irregularities, I can do no more than touch upon some of its most prominent features with the hope of adding my mite toward the establishment of that higher plane of scientific dental practice which is sure to follow the permanent footprints of progression.

In regard to the importance of preserving the deciduous teeth, it would seem that enough has been said; enough was being taught in our colleges by competent teachers to prevent our students in after practice from making the mistakes they do. And of those who have not received these advantages, it would seem moreover that long experience in the practice of dentistry confined as it is to so small an area of the human body, would prevent the possibility of that which at times appears to be a ruthless interference with one of nature's most important provisions.

The deciduous teeth are most evidently for the purpose of affording means of mastication during the years when full sized permanent teeth would be out of all proportion in size and appearance to those little jaws and features. They are there for the purpose of holding the fort, as it were, so as to give nature an opportunity to perform one of the most beautiful of her acts in developing and bringing forward the permanent teeth in successive and systematic stages, timed in proportion to needs and growth. They are there moreover for the purpose of establishing occlusal relations of the permanent teeth and harmonious relations of facial outlines.

At about five years of age the first permanent molars commence to crowd their way into the arches between the bases of the deciduous arches on one side, and the rami and tuberosities on the other. Nature, apparently conscious of the forceful influence of this eruptive process toward an interstitial forward movement of the entire deciduous dentures, has provided the deciduous molars with broad, spreading roots so as to take a sufficiently firm and immovable hold of their surroundings to successfully combat this force, in the same way that will be found with the roots of trees which are subjected to the force of strong winds. Note also how perfectly nature under normal conditions has timed this eruptive stage to prevent that possibility which she so evidently fortifies herself against; and at the same time to take advantage of the general developing forces of eruption. She starts this stage of secondary dentition at a time when the strong phalanx of the deciduous denture is there, or should be there, to resist the forward pressure of these erupting molars; nor does she commence it before there is nearly enough room by growth for those large teeth; nor before the alveolar surroundings of the deciduous roots are developed to comparative stability; nor does she wait until those roots have become weakened by the eruption forces of the bicuspids.

What could be more prophetic than these painstaking acts on the part of nature in emphasizing the importance of preserving the natural relative positions of the bases of the deciduous arches in order that the permanent molars which are destined to establish the occlusal relations of the adjoining permanent buccal teeth will not be allowed to drift forward of their natural positions; because it is upon the established position of the first permanent molars that the relative positions of adjoining buccal teeth are regulated, and which in turn finally establishes the occlusion and dento-facial relation of all the teeth.

From this we may draw a lesson of the importance of preserving these temporary piers to the future arches up to the time of the eruption of their successors, because at whatever stage the arch is long deprived of their support, the permanent molars will surely tend to drift forward to fill the gaps, notwithstanding the restraining influences of perfect interdigitating occluding cusps.

I wish to call you attention to another of nature's acts along this line which is prophetic of the apparently recognized tendency of the permanent molars to drift forward, and of the importance of preventing it up to the last moment. In the typically normal processes of secondary dentition—which usually prevails—when the second deciduous molars are thrown off, the second bicuspids are ready to prick through the overlying gum tissue, and soon take their places in preserving the integrity of the arch. This is another reason for the spreading of those deciduous roots that the resorptive forces of eruption may make a place beneath for the bicuspid crowns and thus permit them to erupt as much as possible up to the last moment of their power to hold the required space open, otherwise, as is frequently seen of lower second bicupsids, they are impacted in the dovetailing inclination of adjoining teeth.

It may be that this is one reason why the second bicuspids are the only ones of the permanent dentures which occupy less spaces than the deciduous teeth that precede them, in order perhaps that they may have a little better chance to get into place before the adjoining teeth can shut them out. And thus I might take up one stage of dentition after the other to show how nature's ways are prophetic of the importance of avoiding the premature extraction of the deciduous teeth.

There are a number of allied branches of this subject also which time will not permit me to touch, viz., the normal influence exerted by dentition, by occlusion, by the action of the buccal and labial muscles, by the growth and development of the jaws, especially that of the mandible which Dr. Cryer has pointed out, all of which tend to characterize and establish the utility and harmony of the teeth in their relations to use and beauty, and which may be greatly interfered with by the premature loss of even deciduous teeth.

I cannot leave this branch of my subject, however, without trying to emphasize its greatest lesson. We are speaking of conditions which would have normally prevailed without interference. Conditions which nature in an otherwise perfect state would have brought about, but this does not mean a typically anatomical state, which is the exception rather than the rule, nor does it refer to those inharmonies in the relative size and position of the teeth, jaws, and general features of the individual which seem to have arisen from prenatal causes. It is this: If the permanent buccal teeth are permitted to drift forward ever so slightly from an otherwise normal dento-facial position in the arch, and the front teeth then erupt in alignment, an abnormal protrusion of the facial outlines will be produced exactly in proportion to this movement. This shows how from premature loss of the deciduous teeth alone, protrusions of the permanent teeth may arise which, though in amount but slightly change the facial contours, are sufficient to mar the expression of the entire physiognomy. When this occurs with both upper and lower dentures, with the teeth naturally retained in their normal occlusion and alignment—all of the buccal teeth having drifted forward together—it is a most unfortunate affair. Because people in general, and among them dentists of renowned ability in orthodontia, seeing these perfect conditions of normal occlusion, interpret the facial imperfections which have resulted from this local cause, as inherent in the individual, or as the most perfect in facial outlines that can be obtained, and who hardly imagine in the faces we constantly meet, there are abnormal protrusions of a more or less extent over the entire dento-facial area, characterizing the features, producing unesthetic expressions, marring those perfect outlines which nature would have produced had she been permitted to have had her way.

Consider with me another phase: If this unnatural drifting forward of the permanent buccal teeth occurs—as it commonly does—before the eruption of the cuspids, and which may have been partly or wholly caused by the premature extraction of the deciduous cuspids in a foolish attempt to prevent an irregularity of the incisors, the irregularity which is characterized by a maleruption of the cuspids is frequently produced. This irregularity, more common with the upper than the lower cuspids, is the most frequent of any of the extensive malpositions which the orthodontist is called upon to treat. And this fact alone, and because it most frequently arises from the injudicious and unnecessary extraction of deciduous teeth, it stands in this stage of our professional progress as a sad commentary upon the appreciation of those higher principles which nature has emphasized, and which plainly shows the importance of preserving the deciduous teeth.

It is with the above irregularity—crowded maleruption of the cuspids—where dentists most often err in an injudicious extraction of permanent teeth. In addition to the many instances of this character, where the bicuspids are wrongfully extracted for the purpose of regulating teeth by artificial force, there are a far greater number of cases where dentists have extracted the bicuspids or the lateral incisors, and even the malerupting cuspids, in an honest endeavor to aid nature in correcting an irregularity, which to them seemed otherwise impossible. The case may also have been one which they as the family dentists had caused by an injudicious extraction of deciduous teeth or a careless failure to preserve the deciduous molars up to the last moment of their usefulness.

Some years ago a prominent Chicago dentist called at my office and said, "Doctor, when you have cuspids that are erupting through the gums above, and with little or no spaces between the laterals and first bicuspids, you have to extract teeth, don't you to get them into the arch?"

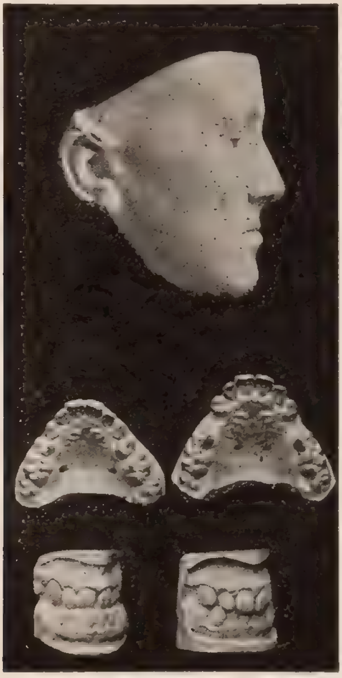
I explained to him and showed with many plaster casts that, however irregular the teeth, however bunched, maligned or malposed, they could always be placed in their respective places in the arches and in normal occlusion; therefore so far as the relations of the teeth to each other are concerned no dental malposition should be taken as a basis for extraction. The only excuse then for the extraction of saveable teeth, must be that it is inexpedient or impossible to correct their positions in that way without producing facial protrusion. In nearly all locally caused malpositions of the teeth in immature arches, the final development of the jaws and general growth enlargement of the features, demand all of the teeth and their sustaining alveolar arches to harmonize facial relations. To remove one or more of them under these conditions will inevitably produce its effect. The effect upon normal arches that would be otherwise harmonious in size and relations, is invariably an abnormal contraction of the arch so effected, and the ultimate forcing of the teeth of the opposing arch into malalignment and malocclusion which frequently results in a facial deformity.

When these truths dawned on his mind, he said: "Doctor, I believe, I have made a very grave mistake. I feel particularly bad about it because it has happened in a family who are my nearest neighbors and dearest friends. Wishing to do the very best for their little girl whose upper cuspids were erupting in this way, I extracted the first bicuspids and now at about 15 years of age I find that all of the upper front teeth are biting back of the lower ones, with quite a depression of the upper lip, which gives her the appearance of a protruding lower jaw."

Suffice to say, the case was corrected as shown by casts (See Fig. 1) with a bodily protruding movement of the upper labial teeth, preparatory to inserting artificial bicuspids to sustain the arch.

Thus I might, if time permitted, continue this branch of my subject and show by almost numberless casts, where dentists had in-judiciously extracted permanent teeth that had resulted from that cause alone, in decided dental and dento-facial irregularities.

There is another side to this subject which relates to the judicious extraction of permanent teeth from abnormal arches. My views upon this branch were published in the May, 1906, *Dental Cosmos* under the title, "The Question of Extraction in Orthodontia," which was calculated to show that in the practice of orthodontia it is quite as much malpractice to avoid extracting teeth when demanded, as to extract teeth when not demanded.



A NEW REMEDY FOR PYORRHEA ALVEOLARIS.*

BY W. H. WHITSLAR, M. D., D. D. S., CLEVELAND, OHIO.

Pyorrhea alveolaris, next to dental caries, is the most destructive of all dental diseases. Its ravages may be observed in the skulls of the ancient Egyptians. Dr. W. J. Younger examined these remains and found that pyorrhea alveolaris existed thousands of years before Christ. He also examined the mouths of living subjects and found the disease almost universal among the Egyptians, at least among the poor whose food was not clean. This was emphasized by the abrasion of their teeth, due for the most part to the sand in their foods, which are mostly vegetables. This food not being washed well, the particles of sand assist in the abrasion of the teeth in grinding the food similar to that observed in tobacco chewers in this country. One of the most destructive cases of pyorrhea alveolaris in my practice was due largely, in my opinion, to chewing tobacco. The particles of tobacco with the sand contained in it forced into the gingivæ and the interstices of the teeth acted as constant irritants which promoted the disease.

---

*Read before the Northern Ohio Dental Association, June, 1907.

Now, it is not the object of this paper to enter into a discussion of the etiology and pathology of pyorrhea alveolaris, but I desire to give the words of Bourdet, who wrote in 1757 concerning this disease, simply to indicate that the disease was well known at that time and that the phenomena are the same today. We, however, are able to discern more clearly the significance of these phenomena. Bourdet says, "The alveoli are susceptible to caries like the teeth, but more rarely. The ordinary causes of this disease are a scorbutic or venereal vice; deposits produced ordinarily by a damaged tooth, the vicious matter of which has remained for a long time in the region. The alveoli may likewise become the seat of destructive or consumptive processes, just as the roots of the first teeth or milk teeth. This is what may be observed when the roots become exposed during suppuration of the gums. This disease is very common. It is ordinarily caused by engorgement of the gums, where the blood is decomposed by stagnation; by an acrid and corrosive lymph, which, soaking those parts, gradually undermines them; by the mere presence of tartar, or by the effect of an acrid and corrosive secretion which penetrates into the gums and up to the root of the tooth. These different causes bring about destruction according to the quality of the alveolus and the disposition of the subject. The alveoli and the intermediate septa which occupy the intervals between the roots undergo softening also at times, and become of a fleshy consistence. This is caused by the stagnation of the blood or of the serous lymph which infiltrates the gums. The abundance of these fluids remain in the alveoli or in the surrounding parts very frequently produces this effect, and this is what causes the tooth to lose its supporting tissue."

These are the words of an observer one hundred and fifty years ago. How wise he was, for, reading we learn that pyorrhea alveolaris, according to Bourdet, may be produced by local or systemic causes, but that evidently the local causes are predominant. This opinion prevails largely today, and from the writings of those who are engaged in the treatment of the disease it seems that more stress is given to local conditions and causes rather than systemic disturbances. Pyorrhea alveloaris is a term given to cover the whole gamut of the disease as ordinarily understood, but when this title is applied to that phase of the disease wherein there are no deposits upon the teeth and no flow of pus, then it is a misnomer. As stated before, it is not to discuss pathology herein, but to present a remedy for the flow of pus from the alveolus, and for that purpose I desire to present the merits of sulphocarbolate of zinc as a medicament of great efficiency. It is obtained my heating a mixture of carbolic acid and sulphuric acid and saturating the product with oxide of zinc, then evaporating and crystallizing. Sulphocarbolate of zinc is found readily in the drug stores and consists of colorless, transparent, and efflorescent crystals which are soluble in about twice their weight of water. From the ingredients of this material it is readily observed that it offers a compound that should prove valuable in the treatment of pyorrhea alveolaris in nearly all of its phases. The United States Dispensatory says that sulphocarbolate of zinc is an antiseptic, astringent, and stimulant to indolent or foul ulcers and in subacute inflammations of the mucous membrane. Practical experience has proven to me that this remedy acts as an astringent, contracting the gums and the tissues about a loosened tooth more rapidly than any other means employed. It is therefore useful when the gingivæ are swollen, as for instance after the setting of crowns or the adjustment of bands in orthodontia. It is useful in fistulous tracts, but should not be forced into tissues with no outlet. I have never observed any detrimental effect upon any of the tissues of the mouth. Being refrigerant, sulphocarbolate of zinc may cause some complaint because of its coldness, but warming the solution will modify this difficulty.

In the treatment of pyorrhea, my treatment is usually a ten per cent solution in cinnamon water. The solution is colored with tincture of cudbear. Give the patient a bottle of this to massage the gums between treatments. Inject the solution into the pocket with a good syringe having a long slender needle that will reach the bottom of any pocket. The Sub "Q' syringe with a gold needle is very good. Carry the point as deeply as possible and flood the pocket and use force enough to carry the fluid to all parts, then quickly massage the gums. Care should be given not to force the solution too hard into the pockets, as that will cause pain, no matter what might be used. After the injection flood the mouth with warm water from the water syringe. Of course this treatment follows the removal of deposits from the roots of teeth and necrosed bone if any. This treatment should begin at the first sitting, even though all deposits are not removed, since it may require a number of sittings to accomplish the surgical treatment. Subsequent sittings enable one to discover the location of remaining deposits by the deep or injected color of the gingivæ. From one to a half dozen treatments will stop the flow of pus in many instances. My observation is that there is no return of pyorrhea in the majority of cases. I may have been fortunate in having good cases, but in one test case which was not seen for a full year after the sulphocarbolate of zinc treatment there was but one tooth in almost an entire mouthful of affected teeth that became affected again. Another case referred to me by a neurologist in which the tongue had a peculiar sensitiveness upon its side was also a severe case of pyorrhea. Within a month the pyorrhea disappeared as well as the aforesaid disturbance and neither has returned. This is a case of over a year's standing, but prophylactic treatment is continued monthly.

The first case in which this remedy was used was a small abscess upon the root of an upper incisor. The swelling was about the size of a pea. One injection of the sulphocarbolate of zinc was given and the following day the gum was flat and the condition so near normal that it was indeed surpirsing.

These cases have been mentioned to show the unusual efficiency of sulphocarbolate of zinc. However, it must be stated that all treatment of pyorrhea alveolaris must be preceded by surgical methods, i. e., removal of deposits upon the teeth, necrossed bone, or resorbed roots having the apex reduced to a needle-like sharpness removed. We must also remember that all cases are not curable.

In conclusion, let me say that having used this remedy for more than a year, it is found to be giving good results and is growing in favor among some of my professional friends who have tried it.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-THIRD ANNUAL MEETING, QUINCY, MAY, 1907.

DISCUSSION OF THE REPORT OF THE COMMITTEE ON DENTAL SCIENCE AND LITERATURE.

Dr. A. C. Hewett, of Chicago:

This is an admirable report, and is clothed in language we can understand. It tells what the writer has read and studied, what should be adopted and advocated.

The department of materia medica is one that is sadly neglected not only in this society, but in the writings of members of the dental profession and of the medical as well. There are terms, names of remedies, used every day which the average dentist may not understand. For instance, the word campho-phenique. I doubt whether all of these young men could give an intelligent description of campho-phenique.

There are other things we talk about, and among them phenol. It is in common use, and is known as carbolic acid. It is one of the most dangerous remedies that is given. It will cause gangrene; it can produce phagadenic degeneration of the tissues of the body, and yet it is used daily. I wonder how many of the young men here know what phenol is, what it is made from, and when it is pure, what is the dosage, what is the toxic effect. We read reports in newspapers of some one having taken carbolic acid and died. Now if people can take enough of it to kill them, a little of it may be dangerous. What is the point? Every young man should know exactly what he gives to his patients in the way of medicines; effects, dosage, and danger if any.

I want to call the attention of this society to one other thing. Unfortunately for me I bruised my leg; inflammation developed, and then gangrene set in, so that I nearly lost my life. Four among the best surgeons in Chicago said I would have to lose my leg. I said, "I will go altogether if I have to go." They said the exfoliation of about half a pound of gangrenous tissue would bring about blood poisoning, and that means death almost always. I said to those surgeons, "I have echafolta, and I am not going to die. I applied and took echafolta and I owe my life to the use of that drug, a product of that beautiful plant *Echinacea Purpurea* which grows upon the wilds of the prairie.

Now, why should not these men before me guard against blood poisoning by the prophylactic use of this drug?

DISCUSSION ON DR. CORMANY'S PAPER, "THE DENTIST OF TOMORROW."

Dr. E. F. Hazell, Springfield:

Dr. Cormany's paper is so full of optimism and New Thought that it will be hard for one who is not a convert to his ways of thinking to discuss it. I, as he has said, "did not come into this willingly."

My sympathies and beliefs have never been in harmony with some of Dr. Cormany's and you will understand why I differ from him in some of his statements. Never having had the misfortune of an attack of nervous prostration, I cannot fully enter into the feelings of the Kentucky dentist. I do not say that I do not believe in suggestion, but I cannot bring myself to embrace it to the extent that these men have.

Affirmations are well and good in their places. However, one should be able to back them up after they are made or they will be of no value. Had the colonies not been able to defend their affirmation of freedom, we might still be subjects of the mother country. The essayist is right when he says "our time is absorbed in the bare maintenance of existence." Any dentist with a reputation and a practice in his community is usually a very busy man, and will use his energy in the pursuit of his daily duties to such an extent that a rest is welcomed when night comes.

Our disposition to delve into the "real meaning and aim of life" is stunted by the demands made in securing this maintenance of existence. The power of thought, of self-esteem, and self confidence is not to be gainsaid, but the results of this self esteem must be manifested in some material form which can and does demonstrate one's ability to not only affirm but to do. We are, in a measure at least, what we make of ourselves and what our environments make of us. We all are creatures of habit and circumstance. Our mental attitude is not wholly the making of our health and happiness. Some people could never be happy and healthy for the reason that their ancestry has not handed down a healthy, normal body and a happy, peaceful, contented disposition. Some men would be calamity criers though their pockets were lined with gold.

Dr. Cormany expects us to believe his paper and follow his line of thought so we can be the "Dentists of Tomorrow" and then proceeds to tell us that the aforesaid dentist will not believe all he hears at the dental society meetings. How can he expect us to believe what he tells us and follow what he preaches? The dentist of tomorrow will be a graduate in medicine and will then take a special course in dentistry or will make dentistry a specialty of medicine, just as the practice of ophthalmology is a specialty of medicine. There is no doubt in my mind as to what greater results we would be able to acomplish and the ease with which our fees would be increased.

The dentist of today, as well as the dentist of tomorrow, should be a happy, cheerful, contented man if he expects to be a successful dentist. Downcast feelings and a pessimistic view of things are not calculated to make a man put forth his best efforts. And unless we do put forth our best endeavor we will not be successful.

Dr. A. T. Olmsted, La Salle:

Papers of an optimistic character, such as this, belonging as one may say, to the "cheer up" order, are useful. We all need whatever of advantage may come from placing ourselves in a proper mental attitude as suggested by the essayist.

We are all agreed, perhaps, that a man's state of mind is the most important factor in determining his career. The only question is how far are we to follow the new thought disciples in their doctrine of the dominance of mind over all else? There comes a time when some of us are beyond our depth. For instance, for a man of mediocre ability to "affirm" that he is among the leaders of men, or for a man "sick unto death" to affirm that he is well would seem an idle thing to any but the elect.

The optimist is a charming fellow and beckons us toward an advanced position even when the ground, to us, is untenable; while the pessimist forces us back when we feel that we might safely go forward. Between the extreme positions occupied by these two fantastic individuals there is a broad ground where the man who knows his own limitations may find a field for action.

If he happens to be a dentist his every-day sanity may be shown by doing those things that he knows he can do well and having the courage to say that there are some things that he cannot do. He can keep up with the procession without running after every new fad, for as a profession we certainly have our share of extremists. Twenty-five years ago capping pulps and talking about the evil constitutional effects of vulcanite and amalgam fillings were the vagaries. Today we are going crazy over inlays, and it is to be hoped that "the dentist of tomorrow" (or the day after) will have means of judging of the comparative merits of fillings and inlays, and just what class of cases each method is best adapted to. Upon you men who are teachers and writers rests a great responsibility. New things should be thoroughly tested before advising your fellow practitioners to follow your lead. Because a "wise man of the west" pointed out the evils that sometimes result from banded crowns a number of excellent operators in my section of the state are putting on bandless crowns when they should be doing something better.

I am not arguing against progress, but am trying to emphasize the fact that each operator should be sure of his ground before he abandons a thing that in his hands has been proven to be good.

Try out all the promising new things, but do not "burn your bridges behind you." That the "dentist of tomorrow" will be a better dentist than the dentist of today is certain. He will profit by the experience of the present day dentist and while knowing what to do he will have a knowledge that is equally important of what not to do.

Dr. A. B. McVay, Streator:

I am sure that no general subject that might be brought before the Illinois State Dental Society is of more vital interest to us all than the "Dentist of Tomorrow," and I believe that there is no State in the Union wheer optimism has more right to prevail. When we think of dentistry as it was but a decade ago, and what it is now since the reorganization of the State Society, what can it not be tomorrow? I believe that this Society is *en masse* a crowd of optimists, and deservedly so. To take a hurried gaze into the tomorrow, I believe that we can see this society instrumental in bringing about one of the great and much needed changes, and that is universal reciprocity throughout the States. I believe the time is at hand for this

Society to get active in this regard. "If the dental men of Illinois *affirm* this, it cannot be other than a reality in a very short time. (Dr. Cormany). We are today delving into the whys and wherefores of the pathological side of our profession as never before—the etiology, if you please.

Tomorrow we will be at the root of many of the evils that today are comparatively visions. We will see the general practitioner truly scientific, doing surgery that today we are passing up to the medical profession. Oral prophylaxis will be taught in our public schools; it should be now. Surely this would be more important than much of the mechanical work, domestic science, and such as is now taught so liberally. The most dreaded disease—pyorrhea—we will wipe out by getting at the real cause, which it seems as yet we have not discovered. We hear so often that we cannot get returns for a goodly effort in our battles with this disease. But, an affirmation with each patient affected with it, and the result is very gratifying today. Tomorrow perfection.

I have during the past few months observed the results of perseverance and determination against not only pyorrhea but most of the hopeless cases. I say hopeless, because today they are generally considered such. In the practice of the late Dr. C. R. Taylor, of Streator, whose face is familiar to nearly everyone here, a man persevering and affirming and truly scientific, the results have been a revelation to me. The conditions existing in the mouths of so many elderly people which I have observed, who have been patients of his for many years, is astounding. Cases of absolutely successful preservation where this disease has existed; ordinarily scores of these people would have been edentulous had they been in the hands of the ordinary practitioner. Cases of orthodontia, and many of them, successfully treated, the results indeed gratifying. Having taken up Dr. Taylor's work after his death, I mention this result because he was a man all knew so well, and it was a case of general practice for a period of thirty years. All this has been indeed a lesson to me, as I trust it may be to many others who are in general practice. Tomororw in dendistry there will be found generally these well-trained, skilful and consequently successful practitioners. We must rank with the physician, not the mechanic only, but the man of science.

GENERAL DISCUSSION.

Dr. E. H. Allen, of Freeport:

I cannot accept the optimistic view that Dr. Cormany takes of this new thought which he has advocated, because if I should believe in new thought to the extent that he does there would be absolutely no limit to what I should expect to do. I will tell you one of the things I would like to do. Understand me, this remark is not made in a trivial sense at all, but if I could by affirmation gain what he claims he has done and can do with his new thought, one of the things I would very much desire is a good, thick crop of hair on the top of my head, of which, you observe, I have very little. (Laughter.) Inasmuch as I cannot accept these affirmations only in a limited degree, I think I shall have to remain with the dentists of today.

Dr. J. N. Crouse, of Chicago:

For fear the real point in this paper or the real interest in this subject is lost in ridicule, I would like to have it discussed more seriously. That there is something in mental science cannot be denied. I have seen its workings in other people, but not on myself. (Laughter.) I am going to mention one instance of many which I could cite.

I recall a woman with a family of little children, who was so nervous that it was almost impossible to perform a good operation in her mouth, she was so liable to break down under the strain. She went to Boston and lived there for two years, and returned to Chicago at the end of that time and came to me for service. She stopped me when I was working on her teeth and said, "Don't ask me whether it hurts or not." She had not suggested that she was being hurt. I was cutting down a lower bicuspid crown for a band to put on a bridge; I knew I was down to sensitive dentine and it must have hurt. As I proceeded, I used warm water, thinking it would be more comfortable than cold, and in wiping off I saw a little opening in the pulp chamber and thought the pulp was dead, and that was why she had no pain. I put a little medicine on some cotton, wrapped the cotton around a broach and passed it down in the canal with a view to getting the pulp canal in an aseptic condition, and then pulled out a live pulp, and the only symptom of suffering was a slight movement. Now, that woman has been in my operating chair and endured operations since that she could not have endured before she got into this new life or new thought, whatever you may call it.

When we think that seven or eight of the largest churches in Chicago are filled every Sunday with intelligent people of this faith or cult, there must be something in it. There are several Boston dentists who talk about suggestion and its importance as a therapeutic agent in dentistry, and they probably carry it further than we do, and they may do better than we do. I have never been able by any form of suggestion to make a patient believe that it did not hurt, when it really did. However, it is not wise for us to condemn or cast ridicule on a thing which we do not clearly understand, and which may develop further.

Dr. C. E. Bentley, of Chicago:

I know very little or nothing about Christian Science; I am unable to grasp it. I plead guilty to having looked into it by reason of the fact that a near relative has escaped an operation that otherwise would have been performed, and has been pronounced by the physicians who advised an operation as cured of the disease that originally necessitated an operation. This was the first thing that attracted my attention to this new thought.

I could give a number of illustrations of the ability to ignore pain by patients who are Christian Scientists. I have had ocular demonstrations of it. That there is something in it there can be no doubt, and if I could take hold of that something I assure you I would grasp it with hooks of steel, because there is no class of individuals with whom I come in contact that are so supremely happy, so supremely optimistic, and are living daily lives in accordance with the right ideals of conduct as that class called Christian Scientists. But I balk at the very first proposition laid down by them. What is it? "God is all in all. God is good. Therefore, if God is good, and God is all in all, then there is no evil, because there is no room for evil because God is all in all."

I cannot grasp that basic proposition, and it is that which makes the Christian Scientists the supremely happy people they are, and they believe it.

Dr. Cormany:

There was no Christian Science in what I advocated today. I appealed to the ideal and the mind and to the possibilities of the individual.

Dr. Bentley (resuming):

This sort of thing, be we credulous or incredulous, cannot be laughed out of court and flippantly thrown aside. There is a something in this that makes for a higher life, that makes for happiness that makes for contentment. What it is I do not know.

This is a subject, when brought before a dental society, which should not be flippantly and ridiculously treated.

Dr. Edmund Noyes, of Chicago:

It is unnecessary to discredit or to diminish the power of mind over matter, and over human circumstances; but if it is claimed by anybody that the mind of any man can control and dominate all the circumstances relating to his personal life, his personal health, the dangers which may surround him, the diseases that may attack him, everything that concerns him, so as to make him exempt from dangers and evils, or what we call the evils, of human existence, it simply is not true. It is not true to the facts of observation, of experience, or of science. I do not quite like the phrase "new thought." I do not recognize that there is any new line of thinking expressed, or that has not been presented to the world in its essential characteristics for hundreds of years, and perhaps thousands of years. There have been men who claimed that there was no such thing as a physical universe and a physical existence long before any of us.

The thing which seems to me important in all this business is that we should be able to recognize the limitations of the power of mind over matter, and perhaps it is just as important that we should acquire a greatly extended knowledge of such power. We do not know how far it may go. Many of its manifestations are inexplicable—at least, to me; but that it has absolute and definite limitations which are of the greatest importance to the safety of human society, does not admit of question.

When men claim that the power of mind over matter is so great that it is right for them to expose the whole community to the contagion of scarlet fever, it is a dangerous claim, and one which from observation and experience cannot be maintained as a matter of fact, and the limitations of that class and character could be endlessly increased in enumeration. It seems to me the most important thing for communities and individuals in these days is to understand that there are limits to the extent of application of these ideas and thoughts.

Dr. George W. Haskins, of Chicago:

I object to the term new thought. There is nothing new about it. It is largely a question of hope in life, and our ability to control ourselves, and we know that life without hope is unbearable.

Following along the same line of thought, I do not think I can do anything better than to refer you to the work of Henry Drummond, entitled "Natural Law in the Spiritual World"; many of those present are of course familiar with it, but those of you who have not read the book should do so. I am sure it will impress you favorably. We all get the blues from time to time; at any rate I do, and anything which will help us out of our despondency and put hope in us is what we need, and just as much as we are able to control ourselves in these matters will we be going up or going down.

Dr. G. V. Black, of Chicago:

That there is an influence of mind over the condition of a person to a limited degree I have no doubt whatever. As an instance of this, I recall a case that came to me. A gentleman whom I met frequently in my outing trips asked me to go with him to see a kinsman of his who was in a bad condition of nervous prostration. The man's mind was turned on to himself, and the whole world was black. There was no happiness for him. Everybody was plotting against him; everything was wrong. One of the first things he said to me was, "I want to go home. There is nobody here that cares for me, or that I care for." "Why did you come here?" I asked. He replied, "Well, it was the same when I was at home. There was nobody there that cared for me, or that I cared for." He looked like a hopeless case. After talking with him for an hour or more I got him in a better frame of mind. A fortunate circumstance happened the next day. An old Indian came along with some relics of the woods, and I induced him to take this man in his boat and show him nature as the Indian sees it, and particularly the things of the forest. The first trip interested him; the second one more, and in a month he was going it alone. The whole world was bright. That is influence in definite directions upon the mind.

In another case I was asked by a physician to go and see a patient of his. I found a bright, intelligent man of middle age, happy as the day, but there was something the matter with the floor of his mouth that troubled him not a little. When I examined him I said to the physician, "Your patient must die. You can consult any one you please, but there is a cancer there which has advanced so far that this man has no chance to live." The patient was informed and simply laughed and said, "I am well and vigorous"; but he died just the same.

Now, there are limitations beyond which we cannot go. There are abundant uses for mental influences that we can bring to bear upon patients, and they are so real that sometimes patients can work themselves into an ecstacy over it, as in the case mentioned by Dr. Crouse. These unnatural ecstacies that are brought about and worked up in this way are evidently only evil in the overwrought condition.

Dr. C. N. Johnson, of Chicago:

Dr. Black and others have spoken about the effect of mental impressions upon individuals. I want to add that mental impressions are capable of absolutely changing the character of the secretions of the body. A nursing mother, who came under my observation, in the most perfect health, was so affected by the loss of her brother by drowning, and her secretions were so changed that in nursing her baby shortly afterward she poisoned the baby to death. Do you think that mental impressions have no effect upon the secretions of the body? We are getting a ray of light on these things here and there, and it behooves the medical profession to study the influence of thought upon the physical organism rather than waste their energy in ridicule.

I have no sympathy, Mr. President, with the vagaries of some people who talk about new thought. I don't believe that there is anything fundamentally new in thought; we are simply growing a little, that is all. But about those phenomena we see demonstrated—they can be explained by the practitioner of medicine if he will place himself in such a mental attitude as to take cognizance of the things appearing before his eyes every day. It is very evident that we have many influences which govern us in life, and we cannot escape the principle that good thinking contributes very materially to good living and happiness.

Dr. George W. Cook, of Chicago:

We have not settled this matter of mental impressions. We have not settled the question as to whether we are really controlling the physiological functions of the body by mental processes or not.

It is a well-established fact that if one becomes mentally influenced under great mental strain, that person changes physiologically, and Dr. Johnson's illustration was a good one. We know that happens, but the effect only remains for a short time. Under certain mental forces physiological changes in the blood are produced, just to what extent we do not know. But we cannot ignore the fact that if we remove certain physical conditions intimately connected with life in all its processes, life ceases, regardless of what kind of mind the individual may have. We as an organized body of men have some influence mentally on each other, otherwise it would be useless for us to be here. We must consider, however, that there is a physical condition; that we have to look after every step we take in life, otherwise we would drop into paths which would overwhelm our existence. We can only go so far. The dentist of tomorrow will not progress one step further than what he accomplishes by his own mental processes, delving into things, developing his mind, rather than running into ethereal things which are beyond our present comprehension.

Dr. Cormany (closing the discussion):

I wish to thank the gentlemen for the manner in which they have received my paper. While not a little ridicule has been cast on some of the views I have advanced, yet most of the speakers considered it seriously. It is hardly necessary for me to answer some of the remarks that have been made, because it would be repeating much of what I have said in the paper. I want to say, however, that there are many limitations to all these things. We do not expect to mend a broken leg by mental influence without the assistance of the surgeon. I do not ask you to cut off a person's ear, throw it against his head, and believe that it will stick there. I do ask you, however, to cultivate a state of mind which is a constant encouragement for good. A man told me he had difficulty in getting up in the morning. I told him what to do, but he laughed at me. Nevertheless, he did what I told him to do. Now, if you who find it hard to get up in the morning will simply affirm just before going to sleep at night, "I will arise with unusual energy and radiance and power of accomplishment in the morning," you will get up without a bit of trouble the next morning. This makes a mental impression on your subjective mind. We are *not* getting crazy over this matter. I have looked into it thoroughly, and I think I have as much horse-sense as most people. You must not blame people who have reason and common-sense for things that fanatics carry on. I sincerely hope we will have a paper along this line again next year, as I would be pleased to discuss it. Again, I wish to thank you for the kindness with which you received my paper.

WISCONSIN STATE DENTAL SOCIETY.

[For papers of Drs. Sackett, Houston and Stolte see July DENTAL REVIEW.]

DISCUSSION OF DR. SACKETT'S PAPER ON "DENTISTRY A SPECIALTY OF MEDICINE."

DR. G. C. MARLOW, Lancaster:

This subject is of great importance to us all at this time. It has been demonstrated fully in recent years that the professional man can unravel more of the hidden mysteries of his profession by taking up some special line of the work than he can by trying to cover it in a general way. I agree with the doctor that dentistry is a specialty of medicine. It is highly essential with reference to the success of the operator whether he be surgeon or dentist, that he understand the nature of the condition he is treating. He should know why it originated, how it extends and what measures are necessary to prevent it. The above applies to all pathological conditions found in the oral cavity, as well as to those in other parts of the body caused by dental disturbances at the mouth. In accordance with early history mechanical appliances had been made and used to assist in mastication, long before physicians were known. This, however, was not true in the healing art of dentistry. We were never able to cope successfully with diseases of the mouth until after the science of medicine had been taught. The words of the essayist are very true when he says that we who essay to practice a specialty should first be well qualified in the general principles of medicine. I wish to thank the essayist for his very able paper.

DR. HART J. GOSLEE, Chicago:

The subject under discussion has been pretty thoroughly discussed by the Chicago societies, both medical and dental; yet we are no nearer a uniformity of opinion now than we were when we first went into the discussion. We find that the medical profession is divided among itself, as to whether they want to claim us as a specialty of medicine. And we find also that the dental profession is divided as to whether they want to be classed as a specialty of medicine.

Some two or three years ago a resolution was presented in the Chicago Medical Society to the effect that "dentistry be and is hereby regarded as a specialty of medicine," with a view to bringing the two professions closer together. That resolution did not pass unanimously, by any means, but it immediately precipitated a very lively discussion, and finally passed. In our own dental counsels it was likewise discussed and passed, but it was not unanimous. Personally, I do not believe that dentistry is, or ever can be, truly a specialty of medicine. It certainly never can be as long as we have a different degree; because we are not educated properly to be considered as specialists of the science of medicine, until we have the degree of medicine. We must either have the degree of medicine to be specialists of medicine, or else the medical doctors must have a degree of dentistry, in order that dentistry may be a specialty of medicine. The demand of the art and mechanical side of dentistry, I believe, also preclude the possibility of dentistry ever being a true specialty of medicine.

In Chicago you find the very closest friends on both sides of this question, and nothing has ever been done about it, even after the passage of these resolutions. I do wish that the professions of medicine and dentistry could be brought closer together, and I believe that by constantly bringing up this subject of the relation between the two, that ultimately they will be brought closer together, as they should be.

Dr. J. P. Buckley, Chicago:

In the early days of dentistry she knocked at the door of medicine, and she was not received. As a result of that, Harris and Hayden started the Baltimore College of Dental Surgery; and our forefathers in dentistry have labored long and hard to make dentistry, not a specialty in medicine, but to make dentistry what she is today, a true and distinct profession. Dentistry has grown and developed to that plane where she is classed today among the so-called high professions or callings in social life; and its members are given consideration accordingly. They are not only considered ladies and gentlemen in every sense of the term, but they command respect for their learning and skill, and are honored for the high aims of the profession which they represent. I do not believe that dentistry is, or ever can be, considered a specialty in medicine. For my part, I am satisfied to be a plain D. D. S.

Dr. H. L. Banzhaf:

For many years I have sought an opportunity for differing with my dear old friend, Dr. Sackett, and wept because I found it not. I am pleased therefore to state that however estimable the paper, I differ with him in most all that he has said. I am also glad to discover that my friend Dr. Goslee has receded from a position which at one time, I believe he occupied, inasmuch as I believe he was the introducer of the resolution to which he referred. If I am mistaken, I beg his pardon.

I believe that dentistry has long since graduated from its early mechanical environment. Dentistry is founded upon anatomy, physiology, bacteriology, pathology and the allied sciences. The dentistry of today is a part of the healing art, and I favor the drawing into closer relationship of all members of the healing art; but I believe, as has been previously stated, that dentistry is just dentistry, and that is quite sufficient. I believe in the onward and upward march of my profession, and I wish that you would reflect on what Dr. Buckley has said in referring to the effort that was made in the early history of dentistry to gain recognition at the hands of the sister profession. That, as he has stated, was denied, and I believe that we should now be able to stand upon our own feet and to develop what is recognized in all civilized lands as one of the truly learned professions.

Dr. T. A. Hardgrove:

I do not really think it would be a disgrace to have dentistry considered a specialty of medicine. It clearly is a thing we ought to be proud of. And the medical profession ought to be proud to claim us as a specialty. The doctor's paper has demonstrated one thing, and that is that a dentist knows a good deal about medicine, but the medical man does not know much about dentistry. The fact that we once asked admission to the medical profession and were refused, is no reason why we should not accept it now. In fact, the progress we have made, and the evidence we have shown of science and skill is all the more reason that we ought to be accepted as oral surgeons, properly speaking. The fact that there is a mechanical side of our profession which enters into our work does not detract from the scientific nature of it at all. If a physician were able to make an artificial limb for a patient who had lost one, or after he had amputated it, he would be all the more a physician. I think the society would do well to consider this a specialty of medicine, and make the medical profession proud of them.

Dr. H. T. Sackett:

I have listened to this discussion from my colleagues with a great deal of interest, and while I feel that dentistry will stand upon its own foundation, that it is a distinct profession of its own, the aim in my paper was toward co-operation; that we might get closer to each other, and the different "ists" all work in harmony; but the average dentist is not looked upon by the average physician as he ought to be. While I consider that it requires just as much ability to be a dentist as it does to be a physician or surgeon, the sole object of my paper was co-operation.

Dr. Marvin L. Hanaford, Rockford, Ill.:

I hesitate to take the floor to say anything, because I shall be obliged to echo what my friends Goslee and Buckley have said in regard to the merits of the question before us. As to whether dentistry is a specialty of medicine, it seems to me that that question was settled long ago in the negative; and it seems rather an undignified thing to me, to keep asserting that dentistry is a specialty of medicine, or making the claim in any way. Dentistry is large enough and strong enough to stand on its own foundation as a profession, separate and distinct from any other. Of course, we know dentistry is built largely upon the same foundation; many of the stones are the same as in the foundation of medicine; but the practice of the profession is so very different that it does not seem to me that the degree "M. D." can ever be made to include the qualifications necessary to a practicing dentist.

DISCUSSION OF DR. HOUSTON'S PAPER ON "INTERSTATE LICENSE EXCHANGE."

Dr. B. G. Maercklein, Milwaukee:

I desire to compliment the essayist in taking the stand he has. His position all the way through is absolutely correct and rational. The paper deserves to be referred to a committee who would have a little more time to deliberate over the various phases, and give the result of their deliberations, epitomized to this society. We have men right here beside us who have been invited to give clinics; yet they would be obliged to pass an examination before a board of their peers before they could be admitted to practice in this state. Now, that is wrong. As the doctor has stated, conditions arise in our life on account of health, family, or financial affairs, that compel people to move from one state to another. I remember a case of an ex-president of this society who was obliged to go west for some of those reasons, who had no end of trouble to re-establish himself in one of the western cities, whose standard of dentistry was probably not higher than that of Wisconsin. Another man was obliged to go down to Louisiana on account of the health of his wife, an old ex-member of this society. Those conditions arise constantly. It is not at all the incompetents or charlatans we desire to foster. The idea is to foster a great broad idea of professional brotherhood, and let that brotherhood reach throughout the States.

I think we ought to take up this question throughout the entire land, and not talk so much of standards; simply recognize a man that is a practitioner, and a practicing legally authorized dentist, no matter what state he comes from, or where he desires to locate. I know in one of the late laws of Iowa it is said that he can be admitted provided the standard is as high as that of the state of Iowa after having practiced five years. Why should a man be obliged to practice five years, or five weeks, or five days, if he is legally registered? And then of the payment of a fee of $25. Are not the boards today having too much money to squander? Do they want to mulct a poor person who has to leave one locality and go to another? The board assumes this high position of giving a man a certificate for high qualifications and moral standing, upon the payment of a fee. Why are the dental examining boards the only persons in the world that can give a certificate that can be recognized by other boards? What is the matter of an oath before a notary public, sworn to before witnesses, that the man is entitled to registration in Wisconsin, or is a legal practitioner? Isn't that as good an attest as that of our board, or any other board? It would cost a man 50 cents to swear to it. A notary public seal is as good as that of the board. It is only an assumption of the examining board that they are it; and they are going to let us know that they are it. We have come to a realization that they are not altogether it; and we modestly and emphatically protest. Now I would like to see this protest take root and spread throughout the land, and let us recognize each other as brothers of one profession, and let us bury state lines, as they were buried in 1865.

DISCUSSION OF DR. STOLTE'S PAPER, "MODERN TREATMENT OF EMPYEMA OF THE ANTRUM OF HIGHMORE."

Dr. R. G. Richter, Milwaukee:

I am hardly prepared to open the discussion on such an exhaustive paper as that is, although I have worked quite a little with Dr. Stolte. He has shown us how closely we are related to the rhinologist where the antrum is implicated. He has also shown us how much more often the disease in the antrum is caused by disturbances in the nasal passages than it is by tooth infection; not by carious teeth, but by necrotic teeth; abscessed teeth; sometimes by periostitis, that has been so excessive as to produce pus formation. A diagnosis, however, is not a very difficult one to make; at least, I have never found it so. The transillumination method, and also the method of the X-ray, will show us the extent of alveolar tissue destroyed, the location of the pus, and the true condition of affairs. So we have no trouble in locating the etiology of the trouble, as far as the tooth is concerned. It will be worth your while, if you have not seen Dr. Stolte's specimens, to let him show you how directly the frontal sinus empties into the antrum. They make it appear as if the antrum was the direct receptacle for all discharges from the frontal sinus.

There is one thing I wish the doctor had touched upon, and that is the Killeen operation.

DR. STOLTE:

That is not in our field.

DR. R. G. RICHTER:

Yes, but you covered the field so thoroughly.

DR. STOLTE:

I wished to show some patients, but I could not bring them here. I have only the one patient where I performed the radical operation; where I found the loose tooth in the antrum. The roots were decayed, and the direction of the tooth was inside, toward the middle of the antrum. He told me that since youth, through his boyhood, he has always sucked blood; and then a little bone came out. There must have been a fistula from his childhood.

DR. RICHTER:

A carious cavity.

DR. STOLTE:

Very likely. But how can the tooth grow in the opposite direction?

DR. RICHTER:

Perhaps it was brought about by a blow. I can illustrate that by a case. After I got back from college I was crowning a lateral incisor, by Dr. Low's method. I went to fasten the crown to the tooth, and the tooth, crown and everything went into the cavity; a large carious cavity that had emptied through the inferior meatus, and had been discharging into the nose from the lateral incisor. It was only shown around the outside of the tooth by raising the gums and examining the tissues. The granulations had formed around the end of the root, and the lower part had apparently healed up. In some of these antrum cases we have that same condition.

By far the majority of cases of empyema of the antrum are produced by infection from the nasal passages, and not from the teeth. We are taking such good care of the teeth now that we have very few of them. In this country we do not have so many infections from the air passages as they do in London. I think the percentage of antrum trouble there is very much greater than it is in this country; due to the fact that we take better care of our teeth, and the atmospheric conditions are better here.

DR. H. L. BANZHAF:

I am not at all sure that I am in harmony with some of the essayist's ideas. I am positive that I have never been in harmony with what we may term unnecessarily radical operations. I wish to thank the essayist for correcting a wrong impression I have had concerning his work. I have been led to believe, from some of the work I have seen him do, that his operations were all of a rather radical nature; and I have repeatedly made the statement that I am one of those who believes in as thorough a preservation of the bones of the face as possible. I do not believe in the entire obliteration of the antrum, for the reason, that any one who has had the antrum obliterated has, usually, a very serious defect of the voice. The vibration is gone. For that reason I am not in favor of radical operations except, as the essayist has stated, when the ethmoidal sinuses are involved. In simple empyema, where the teeth are absent, the alveolar method is usually satisfactory. In cases of a more serious nature the buccal method should be resorted to.

I was very much interested in Dr. Stolte's method of diagnosis; and it seems to me to be entirely positive. It is not only positive, but is apparently simple of execution, and does not exhaust the patient.

The essayist's treatment of the lower meatus is interesting. There is much there that one can reflect upon, and it offers an inviting field for study. As Dr. Richter has stated, there is so much in this paper I could not begin to think of covering the ground at this time.

I do not believe that a vital pulp is ever the exciting cause of empyema of the antrum; even though the apex of the root penetrates the floor. Of course, there might be pyorrhea present, but I am inclined to think that the exciting cause would very largely be limited to other exciting causes such as have been mentioned.

Mr. President, I see Dr. Bentley of Chicago is in the room. I should like to hear from him.

Dr. C. E. Bentley, Chicago:

Dr. Banzhaf has put me in a very embarrassing position. I certainly am interested in this subject, and very much interested in its presentation. We had a paper here this afternoon on the subject of the dental profession being a branch of or a specialty of the medical profession. This paper this evening shows how nearly our specialty may over-lap or come in contact with a specialty of the medical profession. I believe that where the dentist or oral surgeon has to deal with empyema of the antrum it is quite different from the method employed by the rhinologist, or by the methods employed by the essayist, as advocated by him.

The source of infection, as he says, must of necessity come from —or the greater percentage of them—the nasal passages; and yet there is empyema of the antrum caused from pulpless teeth; the exact percentage of which I am unable to state. Those of us who have had an extensive practice, and those of us who pay some attention to this disease, are quite positive in the statement that empyema of the antrum can be and is caused by pulpless teeth. Now, whenever this occurs its treatment and its cure is very simple, as it occurs to me, providing the tooth is the cause; and that is what we are particularly concerned with.

There was one essential characteristic that was symptomatic or pathogenic of empyema of the antrum, when it is caused by a pulpless tooth, that was not mentioned in the paper, so far as I heard; and that was the periodicity of the engorgement of the antrum with pus. That seems to me to absolutely characterize it. It periodically fills up, and it periodically empties itself and fills again. I simply mention that, as I think it is important.

The method of going through the nares was devised and created, as I understand it, by the Germans for diagnostic purposes; the curved needle connected with a syringe, penetrating that thin wall opposite the antrum, and drawing out its contents into the barrel will positively determine the character of the contents of the antrum. For us, as dentists, I would advise that method for diagnostic purposes; but so far as its being an operation that dentists should employ I cannot see its advantage over some others that I might mention.

With reference to the transillumination test, I want to say that it is very uncertain, unless it is confirmed by subsequent confirmatory evidence. The dark line that is right under the eye-lid is more clearly diagnostic than the darkness of the entire antrum. At least that has been my experience.

Now, as to the operation: The operation that has proven most successful with men that I have been associated with has been that of an entrance just posterior to the canine fossa; making an opening large enough for the entrance of a small electric light bulb that will enable you to examine the entire antrum; so that if it may have in it foreign material, such as polypi or any malignant growth, it can be removed. The packing of that with some gauze should be, in all probability, the only treatment that the antrum should receive at that time. On the following day the antrum should be washed out, and free drainage established, with a normal salt solution. I think this method, if a pulpless tooth is the cause, will give almost immediate relief, and will effect a permanent cure; and I prefer it by far to the method of entering through the nares.

Now I trust I have not transgressed any upon the tenets of the paper. This is not offered in a spirit of criticism, but offered from the standpoint of a dentist as to the way he should treat empyema of the antrum.

Dr. B. G. Maercklein:

The society certainly owes its thanks to Dr. Stolte for presenting this subject in such an exhaustive manner. Any one who is at all familiar with the subject knows what an amount of work it has required in order to present that paper to this society in that manner. Like all other things, however, the paper is open to discussion, and to a different opinion on the part of different practitioners. To begin with, I question the exactness of the percentages, as given in the paper, of the origin of the various kinds of the disease. The observation of the persons who made them, and gave the percentages, may have been correct from their standpoint, while somebody else's observations and results might entirely differ. But however we can question that, I am not in a position to contradict it. The idea of the doctor that a large percentage, I believe 64 per cent, of diseases of the antrum, or empyema of the antrum, originate from infection through the nasal cavity, may and may not be true. However, regardless of from what point or source they may originate, the pus is there, and has to be taken care of. He states in his paper that a large number of these empyemas extend to all the sinuses of the head, even to the opposite side, and infect them. Now, why isn't it reasonable to believe that the same cause that infected the antrum infected the other sinuses at the same time? He speaks, I believe, of 24 per cent of the frontal sinuses being affected in connection with the antrum. It is possible that the same cause affects them all at the same time, and it is not an extension of the disease.

In connection with the diagnosis, and speaking of positive methods, that is a question that I have harped upon for over 12 years, and especially in my instructions to classes. Some of my students will bear me out that I have asked the question almost annually, "How is it possible to make a positive diagnosis of pus in the antrum"?

Now, the transillumination, and the other methods that the doctor refers to, remind me of old Dr. Atkinson, who was one of the most flowery speakers we ever had in the American association. He was actually oratorical. In describing a method of lancing an abscess he even got so far as to draw in the angels in heaven to sympathize with the patient before that abscess could be lanced; and all that sort of thing. Old Dr. Story, of Dallas, Texas, got up and asked one question that knocked out the oratory of Atkinson. He said, "Why, what is the matter with the spear-pointed drill, and going right into the abscess? I could open that abscess before Atkinson got through communing with the angels." I think I could make a positive diagnosis of pus in the antrum before the doctor got through standing his patient on the head. You all have dental engines and drills, and there is nothing better than to take a flat-pointed or twist drill that fits the engine and go into the space between the second bicuspid and the first molar, and drill into it. The wall is thin as paper, and you can go right through. You can take a syringe and throw water in and see if puss comes out through the nasal cavities.

I want to know how much more positive entering from the nasal side is than from the buccal side.

Some years ago I contested with Dr. Senn in regard to a case of empyema of the antrum and demonstrated to him absolutely to his satisfaction that there was no pus in the antrum, by the method I have described. There is nothing equal to that. If you find pus you can enlarge it. If you find none you are satisfied that it does not exist.

Now, so far as the dental origin of the disease in the antrum is concerned, it has been said that it may be from a live pulp. I do not believe that it is possible when the teeth are alive, for them to communicate infection to the antrum, because they are not infected. But a large number of those which are pulpless, or poorly filled root canals, can and will communicate a disease to the antrum. Where-ever they exist they ought to be extracted; and you have got a direct opening through the alveolar process to get at it. When the teeth are in perfect order and in correct position it has long been decided that it is unnecessary to extract any tooth for diagnostic purposes. The method I have described, and that Dr. Bentley has referred to, of making an opening a little anterior to that, will give you an opportunity to explore the entire antrum without trouble. It can be done by any person present, if they were to take the trouble, and get into it, and have got the nerve to do it. There are no complicated structures, or large nerves or arteries to be afraid of.

The doctor speaks of the radical cure. He speaks of opening the antrum from the nasal cavity, and in from two or three days to a week there is a radical cure by the simple washing out of the cavity with salt solution. I would like to ask the question: "Why should that method of curing the disease be any quicker than if the opening had been made from the buccal surface?" I believe, especially if the disease is not alone in the antrum but in some of the adjoining sinuses, that the pus is there just the same as it was before, only the doctor does not see it. It is the case of a trusted bookkeeper who steals, and you do not know of his defalcation, like the case of the ostrich hiding his head in the sand and thinking he is out of danger. Now, if pus remains and continues to form under the packing and under the dressings from the buccal surface, the pus would be there just the same if the opening is made from the nasal cavity. You cannot get rid of it. Taking it for granted, for instance, that the frontal sinus is involved, and you make what you call the radical operation for the relief of that pus in the antrum, how do you get rid of it by that method? You do get rid of it, as I have explained. It is discharged through the nasal cavity, and you don't know it is there. Now, it is just as easy to explore the entire antrum from the buccal surface and reach some of the cells, the ethmoidal cells, as it is from the nasal cavity, because you are in a more direct line to get to it. And when the frontal sinus is involved, as the doctor states, you have got to make an opening through the frontal plate of the skull to get at it.

Speaking of the antrum being a reservoir, that is correct. Any one who has studied the anatomy of the parts knows that the frontal sinus and the ethmoidal cells all discharge through the infundibulum and outer cells into the antrum. A small line of mucous membrane folds ahead of it. I believe there is a constant discharge in health, and only an unusual amount in disease. I believe the antrum is capable of emptying itself and taking care of itself, if the ordinary discharges only go into it. There is an opening from the middle meatus into the nose, and I believe by changing the position, or blowing the nose, or some other way, the antrum is emptied constantly. But if the surfaces are diseased, the openings are swollen or closed so that the pus cannot get out, we have to give a vent to it in some other way.

In speaking of one of the methods—I don't remember the name—there was so many of them mentioned—but of retaining the nasal mucuous membrane and spreading that over the floor of the antrum the doctor speaks of the thickening membranes, and he shows the floor of the antrum, which is usually, in that class of cases, necrotic. Now, if there is any necrotic bone I would like to see the union of membrane from the nasal surface take place with that necrotic bone. The necrotic bone will have to be carefully removed and taken away before any results can possibly be expected; and that can be done as well from the buccal surface as it can from the nasal cavity, in my opinion, even better. Speaking of the anterior angle, it is difficult for curettement from the nasal cavity. You can reach it from the buccal opening, if the opening is made large enough so that it will not close in readily. The great fear of operators was that they would not be able to close that readily. My fear is that it will close too soon. You can keep the antrum clear from the external surface as well as you can from the nasal, in my opinion; and every practicing dentist can practically perform that operation.

The doctor also calls attention to the fact that there is no loss of blood; the hemorrhage is so slight. You take for instance, a case of polypi, and of a long standing condition, where the pressure of the pus has been considerable on the blood vessels, when the pressure is removed the blood vessels are practically paralyzed. I would like to see the doctor remove the polypi through the nasal cavity without the loss of blood. I have had a large number of that class of cases, and I do not hesitate to tell you that the loss of blood is considerable, and they will bleed very freely. It will flow as thick as the opening will admit it to come out, and you have got to be quick in your operation to get rid of those polypi and remove the diseased mucuous membrane before the blood will cease flowing. I have never had cases where the patient became so low that they would require five pints of normal salt solution to keep them alive. I get rid of those polypi in a hurry. I had a case recently in the hospital where the bleeding was very severe. The patient was discharged from the hospital within a week, cured, and has remained so now for several months.

If you have a simple empyema of the antrum you can cure it just as well from the external surface as from the internal surface. If you have cases where it is complicated, where the disease or origin is somewhere else, you are obliged to go to the root of the trouble before you can expect a cure.

DR. J. P. BUCKLEY, Chicago:

I want to commend the essayist for his admirable paper. It emphasizes what was brought out this afternoon, the closer relation between the professions of medicine and dentistry—I would not say between the two specialties of medicine. The treatment has been made here tonight that by means of a skiagraph positive diagnosis of these conditions can be made. Now, by means of skiagraphs we have an aid in surgery in making diagnoses; but you must not depend, as the last speaker has said, upon the skiagraph for your positive diagnosis. Photography is too treacherous to depend upon that entirely. Besides, your picture depends upon the fact that you have got a bone, through which the rays of light pass with difficulty. Now, the rays of light will pass through a polypus, or polypi in the antrum.

They will pass through pus in the antrum, and will not show definitely and positively in your picture.

I want to emphasize first the absolute necessity of a more intimate knowledge of the anatomy of the face and head on the part of dentists, if they are going to perform this operation. It is within the domain of every dentist to perform it when the origin of the diseased condition is from the dentist's standpoint. On the other hand, I have reasons to emphasize the necessity on the part of physicians of a more intimate knowledge of dental anatomy. It so happens that I put in my grip the germs of two permanent bicuspids—non-erupted bicuspids—and an almost erupted first permanent molar, that was supposed to have been erupted in the antrum; and this is the way these teeth were erupted in the antrum (producing specimens). A prominent young surgeon in the city of Chicago made the diagnosis, on a little girl 6½ years old, of antrum trouble. She was anesthetized, and the surgeon operated upon the case. I was present. The surgeon was a prominent rising surgeon in Chicago. He is doing as much surgery as Murphy or Senn are doing today. He is recognized as a coming young man. He did not go through the nose, as this gentleman likes to do, because that is his cavity. Every dentist advocates opening through the mouth, because that is our cavity. But this surgeon opened into this antrum through the mouth, not with the dental engine, but with a chisel. After he got into the antrum he dug out, with his blood and pus, these teeth. Then a smile appeared on his face because he had found the cause of the antrum trouble in that little girl six and a half years old. After he had performed the operation he knew that these teeth had erupted in the antrum. Now, that surgeon, and he is a good one, did not know dental anatomy. He did not know that above the temporary molars were the non-erupted germs of the bicuspids, and in going into the antrum he pushed them in. They were not in there until he pushed them in, and then pulled them out. One of the deciduous molars was abscessed, and it is difficult for me to believe that the pus would burrow from that little baby molar past these healthy non-erupted bicuspids, and get into the antrum and cause antrum trouble. I earnestly hope she had antrum trouble, but it is difficult for me to believe she did. I have no reason to say she did not, because I did not see the case until after the operation. Now, I want to emphasize again, on behalf of those of us who are dental surgeons, that it is our duty to our patients and to ourselves to study the anatomy of the head. We can be familiar with the anatomy of the whole body, for that matter, but especially the anatomy of the head. And it is the business too of physicians to know more about dental anatomy than some of them do.

Such papers as this, coming from medical mèn, read before dental societies, will do good in bringing these two professions together, so that we do not need to feel that we are acknowledging our ignorance by calling in specialists to aid us in our diagnosis. And the time will come when the physician or otologist will feel like calling in the dentist to aid him in making a correct diagnosis in many of these obscure cases.

The young men who are here tonight and who have listened to lectures in dental colleges on this subject, and who have read the dental text books on this subject, I presume will wonder "where we are at"; because not a word was said, I am glad to say, about tubes and plugs, and all those things that were spoken of and are spoken of in many of the dental text books on this subject, as a means of keeping the opening which you have made patulous or open until the case is cured.

Dr. T. A. Hardgrove, Fond du Lac:

I only wish to ask the doctor a few questions. I would like to know if he considers the infection in the frontal sinus as originating from infection that exists in the antrum. Or, in other words, if he considers it an escending infection; or would it be a descending infection from the frontal sinus?

I would like to know if he thinks that the antral disturbance occurs from the occlusion of the meatus or opening into the nose. And I would like to know if it would not be good practice to introduce a needle through the alveolar wall, in mild cases, and where washing out of the antrum would be sufficient to bring about a cure. If it would not be good practice to introduce a trocar or needle into the alveolar wall and wash out the meatus; if that would not produce a cure as well as the more severe operation?

Dr. Stolte (closing the discussion).

Gentlemen: I was very much interested in this discussion, which will certainly widen our knowledge and clear the different views in antral empyema. But from some objections and statements, made to my views, it appeared to me, that speakers misunderstood me in some important points. Therefore, I will answer chiefly these objections. Dr. R. G. Richter and Dr. Banzhaf, I have to thank sincerely for their kind and obliging remarks to my paper. Dr. Richter wished I would have drawn into the discussion also the operative methods on the frontal sinus, but unfortunately the time is so limited that I cannot touch this important question today, as it lies quite out of the sphere of the oral surgeon and would carry us too far from our subject. When Dr. Banzhaf says he is not a friend of radical operations as due to the subsequent obliteration of the antrum, as they produce a striking change in the normal timbre of the voice, he is perfectly right in his view, but he is mistaken, when he believes that our radical operation obliterates the antrum. On the contrary, we try to preserve the normal cavity of the latter, only creating a larger opening toward the nose. Of the radical operation Dr. Banzhaf refers to is the buccal method or Küster, of which Dr. Maerklein is an adherent, who tries in chronic cases, by daily packing from the mouth, to obliterate the whole antrum cavity. Further, I wish to thank Dr. Banzhaf for changing his opinion about my being a radicalist, because by chance, he happened to see three of my radical operations. I am absolutely on a conservative standpoint, and always try if possible, to accomplish a cure by the slightest surgical procedure. Only when there is an absolute necessity, and that is comparatively rare (cases of total degeneration of the lining, the interior being filled with masses of granulation tissue, thickened mucous folds, collection of polypi, cystic degeneration, the interspaces being filled with stagnated and putrified cheesy pus, the bony walls, especially the floor and its septa partly necrotic, synchronic involvement of the other sinuses, especially ethmoidal and sphenoidal), I do resort to a radical operation of Denker's type. In all milder chronic cases, or about 90 per cent, we can avoid the grave traumatic procedure, and also the anesthetic, producing a cure in a very short time by an intranasal operation (Rheti) under local anesthesia.

The periodicity of the antrum filling with pus and emptying again, which Dr. Bentley mentioned, is a fact. It usually takes place in cases of simple empyema only; that is, simple accumulation of pus in the antrum without chronic changes of the lining. It is due to the changing state of the nasal orifice of the antrum. When this opening is swollen and closed due to an increased inflammatory condition of the middle meatus, the antrum fills with pus; on the other hand, when the opening becomes free, by the decreasing of the swelling of the infundibulum, the antrum empties itself in the natural way during the respiratory act, the alternate condensation and rarefaction of the air in the nose causing a pumping action upon the sinuses which are usually empty. I agree entirely with Dr. Bentley, that in the transillumination test the infraorbital crescent shadow only has proving power, as I fully stated in my paper. But this test does not give evidence of the presence of a simple empyema. In simple empyema (that is filling of the antrum with pus without chronic degeneration of the lining) no shadow is present. The test gives us evidence only of the chronic thickening and degeneration of the lining and filling with polypi. Puncture of the antrum is the only positive evidence of simple empyema, as for instance in acute cases.

Dr. Maerklein doubts the given statistics referring to the frequency of the nasal or dental origin of the antrum empyema. This is given by Strubel as a result of over ten thousand collected post mortems and is absolutely reliable as far as statistics can be. Regarding the standpoint of operation it is irrelevant, being confronted with a chronic empyema, simple or combined, whether th eoriginal cause has been a pulpless tooth or a nose infection for instance by influenza. This is only of importance in acute empyema, in which we have, it being of a dental origin, to select the dental route to attack the disease. But in chronic empyema, where there are already chronic changes of the lining, polypous involvement of other nasal sinuses, we have to choose that method of operation which gives the quickest, simplest, and most lasting cure of the whole disease, not of the antrum empyema alone.

Dr. Maerklein further asks, why it is not reasonable to believe that the same causes that infected the antrum infected also the other sinuses at the same time? Nobody has doubted that, especially not I, who emphasized repeatedly in my paper this very usual way of infection, for instance in influenza, which usually affects at the same time several sinuses, but only the one which has unfavorable anatomical conditions regarding the orifice becoming chronically diseased. I emphasized also the fact, that there are two other ways of infection of the antrum, and of the other sinuses, whether the upper sinuses (as frontal, ethmoidal or sphenoidal) being primarily diseased, infecting gradually through the infundibulum the antrum or the antrum being primarily diseased (by dental cause or by an infectious disease), this infecting gradually, especially in an anatomically narrow nose, the other sinuses, the pus being forced by blowing the nose vehemently, into the latter.

Now to the diagnosis: Dr. Maerklein compares my description of the different methods of diagnosis which I enumerated, to make it complete, with that of calling on the angels in heaven to sympathize with the patient instead of going at once into medias res and simply puncture the antrum. From this, I have to conclude that Dr. Maerklein has not given my paper a fair consideration, because I stated expressly and repeatedly, that the only positive method under all circumstances, is to puncture the antrum.

I also stated, that the rhinologist is ofttimes in the advantageous position of convincing himself without resorting to a puncture of antrum empyema by only examining thoroughly the nasal chambers; namely, when he sees a road of pus streaming down over the posterior third of the lower turbinated body. This sign is the more convincing, if the pus appears instantly again and renewed when the patient, after having blown the nose, brings his head to a downward position for a few moments and then raising up quickly, thus by bringing the opening down to the lowest point you facilitate the natural emptying of the antrum. This perfectly harmless test which gives in some cases already strict evidence of the empyema, occupies a few minutes and does not involve any surgical procedure; but Dr. Maerklein thinks this is a waste of time and advocates, as soon as he hears a patient complain, which would indicate the possible existence of antrum trouble, to drill at once through the facial wall, claiming that he will be able to make a positive diagnosis of pus in the antrum, before I got through standing my patient on the head. I rather doubt that Dr. Maerklein's method of diagnosing the empyema by means of the drill, is so much more speedy than my method, including all the different consecutive steps I usually employ, as stated. In my opinion, getting the consent of the patient to the operation alone will, at least in the average case, take up as much time, as the entire diagnostic procedure, I employ in my office, say nothing about the time consumed in the sterilization of instruments, in the disinfection of the place of operation and the necessary cocainization of the latter. That all takes several minutes and during this time I might have arrived at a positive diagnosis of an antrum empyema just by looking into the nose and applying the test of bending the head down. Should this test, which occupies only a few minutes, prove doubtful, I make it more complete by the transillumination which takes ten seconds and gives us evidence of chronic involvement of the antral lining. In the meantime, the infundibulum is cocainized and we puncture in case we should not have the certainty, the antrum from the infundibulum through the membraneous part which can be done including the subsequent washing process, in half a minute. The consent to this operation is not necessary.

This surgical procedure is perfectly harmless, painless, and due to the sterile condition of the nose, without any possible injurious consequences, which we cannot claim of the drill method through the facial wall, which I employed for several years and gave up because we cannot avoid now and then a subsequent and grave periostitis of the facial wall. This unpleasant occurrence is produced either by infection by way of the mouth, because we cannot sterilize the germ-laden mouth cavity or by way of the antrum, the pus in the antrum infecting the injured periosteum through the artificial opening. Another danger lies in this procedure. Suppose the antrum shows itself free of pus, we are then liable to infect the normal antrum by drilling through and carrying from the mouth cavity pus producing germs into it. For these reasons, one cannot compare both methods of puncturing the antrum so far as quick execution, perfect safety, and harmlessness are concerned.

In case a pulpless tooth has been the cause of an acute antrum empyema matters are different. Under such circumstances, we are justified to enter the antrum by extracting the causal tooth through the alveolus. This opening at the lowest point guarantees an excellent drainage if large enough to remain open for the required length of time.

Dr. Maerklein further seems astonished, when I speak of a radical cure by way of the nasal method, as for instance, in Denker's operation, within from two days to a week, and why that should not be possible by the buccal method. I must say, either Dr. Maerklein takes pleasure in misunderstanding me or he has not paid the necessary attention to my paper. At first I did not say there is a cure within two days, but I did say there is scarcely any secretion, after the dressing has been removed after three days of packing the cavity, and ofttimes the case is healed in from two to three weeks. I claim such results only in cases that are free from complications such as involvement of other nasal sinuses, or in cases where it was possible to cover all denuded bony walls with healthy mucous membrane lining.

Secondly—This quick result is absolutely impossible by the buccal method, for in case of curing the antrum by obliteration, it takes from six to twelve months to obliterate the antrum entirely by granulation and in case of treating the opened antrum by washing out, there is no chance of a cure as long as the antrum is connected with the mouth and a constant reinfection takes place. This, Dr. Maerklein disregards entirely, in not recognizing the better chances of curing the antrum by way of a permanent nasal opening.

It is a fact that the mouth lodges millions of the most virulent germs and the nose cavity is generally relatively sterile, consequently, we can keep the antrum sterile by treating it from the nose, whilst by the buccal method the wound cavity is constantly reinfected and irritation is kept up producing new granulation and pus. The pus and secretion drained by means of iodoform gauze into the mouth is a troublesome factor for the patient, who has to taste the secretion and the iodoform constantly. Dr. Maerklein is mistaken when he believes that we do not attack the source of all evil, the antrum cavity, in the radical way from the mouth. His method, the buccal method, breaking down the facial wall and curetting out all diseased parts, is the first step in our radical operation, only that we extend the removal of the canine fossa and parts of the buccal wall into the projecting ridge of the apertura pyriformis of the nose, in order to get a perfect view and control of the anterior inner angle of the antrum. Whilst here Dr. Maerklein's operation is finished we go further and remove the whole anterior lower and middle part of the nasal wall of the antrum, preserving the nasal mucous membrane lining, and using this to cover the denuded floor of the antrum after having removed thoroughly from this part, as its lining is mostly intensively diseased, pathological tissue. In this step lies the secret of our quick cure, as the floor of the antrum especially keeps up a pathological secretion for a long time, and prevents a cure. Thus we create, while we entirely close up the opening to the mouth, fixing periosteum to periosteum, mucous membrane to mucous membrane, a permanent wide opening to the nose, which allows by having the floor of antrum and floor of nose on the same level, not only the freest drainage, easy syringing and control of the cavity, but also freest ventilation by the respiratory act, the air acting as an important factor to reduce any formation of granulation and to heal the cavity in the quickest way. You can easily imagine how quickly a cure of the disease can be produced in this way. After three to five days the mouth wound is perfectly healed, the mucous membrane flap, which gives the floor a new healthy covering is also firmly grown on and what is necessary to accomplish a lasting cure is to bring the other sections of the antrum lining which are freed in the operation by curettage from all degenerated and pathological parts, to a normal condition, which is accomplished by daily syringing—an act the patient can do several times daily with the greatest ease, without any pain or trouble and by the free ventilation of the respiration. So we can see lasting cures within three weeks.

Dr. Maerklein's claim, that I imagine my cure simply from the fact that I do not see the pus in the antrum, which is drained out into the nose by the packing and which runs as before into the antrum from the other sinuses, when they are involved, is ridiculous. When there is any pus issuing from other sinuses, we see it, by our rhinoscopical method. But we constitute the fact that other sinuses are involved before we operate on the antrum and operate either in previous operation or in the same operation, these affected sinuses, because a cure of the involved nasal sinuses is a *conditio sine qua non,* for a cure of the antrum. The sphenoidal sinus we attack by way of the antral route; in the same way ethmoidal cells, frontal sinus by an external operation, or both in mild cases by way of the nasal route. This is just the point I emphasized so much, that the dental surgeon, as he has to neglect the other nasal sinuses while lying out of his sphere is not able in many cases to cure the antrum by the alveolar or even by the buccal method.

Further, I stated that the rhinologist is in the advantageous position to cure even inveterate chronic and combined nasal antral empyema without resorting to a grave and traumatic radical operation as described before by resorting to Rheti's intranasal radical operation.

In this operation, which is done by local cocaine or alypin anesthesia, and in comparison to the buccal method is relatively bloodless, the lower nasal wall of the antrum is removed by way of the lower meatus and the diseased contents of the antrum are curetted. Through the large permanent opening to the nose, the healing process in the antrum is controlled and the cavity daily syringed by the patient himself. Pain and troublesome after-treatment do not exist in this operation, by which we can cure nearly 90 per cent of all chronic antrum cases. Further, I have to correct a misunderstanding of Dr. Maerklein, who quotes me as saying, I cover the necrotic floor of the antrum with a flap of mucous membrane, taken from the nasal wall. It is evident that a healthy living flap cannot grow on a necrotic bone surface. Dr. Maerklein failed to hear that I said we free the floor beforehand, from all diseased tissue, such as granulations, unhealthy thickened lining and all necrotic parts. That is self-evident.

Gentlemen, I wish to thank you for the interest you have shown to the subject of my paper by your lively and interesting discussion. I am only too glad when the chief purpose of my paper has been, to widen the cordial comradeship between both professions and bring them together for a united work in this sphere, in which science has made such gigantic steps to the front in the last ten years. But we have to recognize this progress and to have the courage to give up dear and favorite methods and to accept better and quicker ones born out of the progress in nasal surgery; otherwise, we will stand still and retrograde.

DISCUSSION OF DR. BUCKLEY'S PAPER ON "A CONSIDERATION OF GENERAL THERAPEUTICS AS APPLIED TO DENTISTRY."

Dr. Arthur D. Black, Chicago:

I do not want to discuss the paper, because I do not feel able to; but as Dr. Buckley stood in front of me and constantly referred to "fistula," I cannot help but get up and reply to that. The definition of the word "fistula" in different dictionaries varies a little. There is no misunderstanding over the word sinus in all the dictionaries. Sinus is the name applied to a tract that carries pus. That is plainly stated in all dictionaries and encyclopedias. In those same books a fistula is stated as an abnormal tract which carries fluid; and in going over all those very carefully you will find that the preference is given mostly to the use of that word to describe an abnormal tract which carries a normal fluid. So, to my mind, the word fistula should be applied to an abnormal tract which carries some one of the normal secretions of the body; such as a salivary fistula, if we have an opening through the chin so that the saliva passes through, or a urinary fistula, if we have an abnormal opening, so that the urine is discharged through that; and so with the different secretions of the body.

There is no question but what "sinus" is absolutely the proper term to use in connection with such tracts. There may be some slight justification, as I have said, in the distinction of some dictionaries, for the use of the word fistula as applied there; but certainly the preference is given to the other. We can improve our nomenclature by using the word sinus when referring to a tract that carries pus, and fistula to the other.

Dr. H. L. Banzhaf:

I wish to thank Dr. Buckley for this very splendid lecture. I have enjoyed it exceedingly, and while I cannot discuss the formulas at this time, I will say that I believe that the doctor has somewhat revolutionized therapeutic practice. There are those who have often used formalin and tricresol, and other remedies mentioned; but I do believe that, as far as I am aware, Dr. Buckley first put their application in dentistry upon a scientific basis. He has given us valuable lessons in chemistry. We know why we use these drugs. We know we are trying to destroy the gases as they are formed, and reduce them to liquids and solids. I wish to emphasize that in aborting an abscess, or treating any putrescent condition of the pulp your success depends largely upon hermetically sealing the cavity. Unless you have the courage and belief—which belief must be founded upon your scientific understanding of what you are trying to accomplish—to seal the cavity and feel convinced that the gases which form will be destroyed, you will to that extent lessen the successful application of these remedies. Unless you seal the cavity your formaldehyde gas will escape and thus defeat the object sought.

Dr. W. C. Wendel, Milwaukee:

As one of the older members of the Wisconsin State Dental Society, I cannot allow this opportunity to go by without paying a compliment and my highest respects to Dr. Buckley. He throws a stigma upon the proprietary medicine, and he has given us in the lecture different remedies to be used in treating different pathological conditions. One of the deplorable conditions existing among the profession is that they do not understand and follow pathological conditions; and when they do find a diseased condition they apply a remedy that they are not familiar with, nor do they understand its chemical constituents; and therefore are not able to work intelligently. I have been very much pleased with Dr. Buckley's illustrations, giving the different remedies he has applied, and why he has applied them; also his explanations in regard to the chemical compositions of the different gases we meet with. It is not alone the bacteria that we are to overcome, but we have many gases, such as sulphureted hydrogen, when the putrescence and putrefaction takes place, and ptomaine poison and nitrogenous matter.

I think it would be well for us to study carefully our pathological conditions when presented, and then apply the proper remedy. Also that we should be familiar with the constituents we are using for the purpose of eradicating disease.

DR. C. E. BENTLEY, Chicago:

I must at this time congratulate the Society upon the excellent exposition that has been made of these drugs and their therapeutical effect. I wonder if you realize what this all means; if you have taken into your consciousness the full import of what has been given you here. I am one of those individuals who believe, unqualifiedly and without reservation, that anything that we may have we are in duty bound to give it back to the profession to which we owe so much. I believe that all patented things are a violation of the true ethical spirit. I believe that the selling of methods is an unmitigated shame, and any man that does it I have a contempt for, in a professional way. Personally I may love him, but professionally I contemn him. I claim that if, perchance, we are in a position to give anything to a profession that has given us so much, it is our duty to give it freely. With that thought in mind, how must we hold up to public esteem the young man who has spoken, who has given to us ungrudgingly and unselfishly many formulæ we can use at our chair, and demonstrate to our satisfaction. Every one of these formula has its practical application, and is susceptible of demonstration. They might be seized upon by the unscrupulous and selfish man, and sold to us for so much per prescription, if he so desired. Dr. Buckley has given us the benefit of his researches and experimentation, and these are recognized by the pharmacopœia, and have stood the test of investigation. Therefore I say that this Society is to be congratulated that he comes, of his own free will, and gives to you and to me the results of these investigations, and tells us how our professional burdens can be made easier.

With reference to that splendid prescription, cresol and formalin, nothing has come to us that has so lessened our burden and made the practice of dentistry a pleasure rather than a task. There have been many formulæ that have been sold to us at exorbitant prices. For fifteen cents you can make up enough of the material for this formula to last a year. I can give my personal guaranty, from personal experience, that what he says is true to this extent, that the treatment of putrescent pulps and diseases of that kind in teeth that have been so afflicted is no longer a bugbear; and we have no longer concern, after we have sealed this prescription into a tooth, as to whether that tooth is going to give any trouble or not. Its efficacy depends upon hermetically sealing it into the tooth, which is something we have not dared heretofore.

Dr. J. P. Buckley (closing the discussion):

Dr. Banzhaf emphasized the necessity of knowing the reasons why we use certain remedies. This tendency today in medical therapeutics, as well as all therapeutics, is rational therapeutics. In the past we have been satisfied with empirical methods. If we got the results, that was enough. That is empiricism. In rational therapeutics you must know that you will get a rational result, and you must know why that result is brought about. In reference to the abscess remedy and putrescent pulp remedy: the treatment of putrescent pulps and blind abscesses has been the bugbear of the profession. Today it is placed on a rational basis. We get good results, and we know why.

Dr. Bentley has spoken very flatteringly and kindly of me. I know it is all undeserved; but I have had men come to me and tell me that I was foolish that I didn't sell these remedies. That if I had I wouldn't need to practice dentistry any more.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held January 7, 1907, with the president, Dr. George W. Cook in the chair.

Dr. C. S. Case read a paper entitled, "The Importance of Saving Deciduous and Permanent Teeth."

DISCUSSION.

Dr. L. L. Davis:

I would like to ask Dr. Case what he would do with children whose deciduous molars are absorbed and thrown off before any of the permanent teeth are erupted.

Dr. Case:

My paper referred only to normal conditions that arise.

Dr. Davis:

Dr. Case certainly has given us a very good paper on the subject, one that we all ought to study. I do not do very much extracting myself, but in referring our child patients for extraction, such a line of work as he has laid down should be followed closely by the general practitioner. I never extract teeth unless it is an absolute necessity. In fact, I sometimes think that I hold on to temporary teeth too long. I removed today four fragments of temporary molars that were wedged in between bicuspids and permanent molars.

Dr. E. A. Royce:

The preservation of the deciduous teeth certainly is a very important matter, and I have also found it to be a most difficult one. The theory I have always held in regard to the building up of the arch by the eruption of the teeth has been somewhat of a mechanical one. The first permanent molars are the foundation of the arch. We start with them, then come the centrals and the laterals, and then the first and second bicuspids. With the loss of the second deciduous molar we lose a tooth that is larger than the one which is to occupy its place, but about the time of that loss the cuspid tooth comes into place and usually outside of the arch. My observation has been that the bicuspids move back, and let the cuspid into the arch as a keystone is put into an arch in masonry. If we lose any one tooth in an arch, we have broken it the same as any one factor in an arch of brick or stone will weaken the arch of a bridge or any mechanical arch. Accepting this, it seems to me that every effort should be made to preserve all the space that nature has given us to allow the cuspids a chance to come into place merely by the force of the muscles of the face.

The only reason I can see for the extraction of the deciduous teeth is an incurable abscess. I believe that there is a decided movement of the bicuspids backward. I have found by clinical observation that in a very large number of cases the permanent cuspid will come into place when erupted entirely out of the arch simply by the force of the lip muscles. If there was no space left by the second deciduous molars, where do the cuspids get the space?

Dr. Case:

By the general growth of the arch.

Dr. Royce:

I believe, too, that the roots of the deciduous teeth should be preserved even when the crowns have been lost. I am very glad to hear Dr. Case's scientific reasons for this, because I consider him well able to give us the reasons for everything connected with orthodontia

Dr. W. V.-B. Ames:

It is gratifying to hear Dr. Case take the ground he did, because it makes me feel comfortable over the course I have pursued, believing that there is every reason for retaining the deciduous teeth throughout the full time intended. Dr. Royce gave voice in his last remark to the gist of what I wish to advocate, leaving the deciduous teeth, especially the deciduous molars and even the roots of these if they will hold together. I think it has been conceded that the roots of the deciduous teeth do not absorb physiologically after the death of the pulp, and in that belief I have been in the habit of retaining deciduous teeth in place, and yet allowing eruption of the permanent teeth by grinding away the entire crown of the deciduous molar, in that way allowing its expulsion from the alveolus by the oncoming permanent tooth. I sometimes would leave the pulp canal and the canals of the roots entirely open, instructing the mother as to the care of these even going so far as to give her a small syringe with which to wash out these spaces, although in half the cases this will not be done. But I felt, and observation seemed to bear me out, that no great harm is ordinarily worked by the fact that these spaces are not kept thoroughly cleansed.

With single-rooted teeth, the time comes when these should be removed, whether the roots have absorbed or not. In the case of deciduous molars, the oncoming bicuspid will keep itself well locked between the ends of these roots and direct itself downward or upward as the case may be, but single-rooted teeth are apt to be diverted sideways and without extraction the time comes when there is trouble. But with the molars I would wait until the imperfectly absorbed roots would be shoved out from the surface of the gum, and as the crowns of the oncoming tooth begin to show, there is very little left to pick off.

Dr. T. W. Brophy:

I have heard this subject discussed a great many times, but Dr. Case has presented a paper which has dealt with the subject more exhaustively than any paper I have heard. It is a fact that practitioners of dentistry do not seem to realize the importance of having deciduous teeth properly cared for. As a consequence, Dr. Case and many others engaged in orthodontia find that these patients come to them at a time when it is exceedingly difficult to do anything for them. Dr. Case will agree with me when I say that a great deal of the work he is doing might be avoided if these children were cared for properly by their parents, and by the dentist.

Regarding the care of deciduous teeth, it is not a question of irregularities, but one of pathology. These conditions arise from want of care, and I believe that they play an important part in the life of the patient. Later in life the general condition is disturbed, mastication and other physiologic functions are interfered with, which necessarily must make a deep impression on the health of the patient. One who has irregular teeth whose surfaces do not meet in proper relation, so that normal occlusion is not secured, cannot masticate food properly. I have known some very striking instances of that kind.

This whole subject of orthodontia and conditions of children's teeth grows on me all the time. It means so much, from a prophylactic point of view. If we consider the subject of preventive dentistry, we must place this one in first place.

I wish to express my admiration for the man who has placed himself before the profession of the world as a master in this line, and with my friends I rejoice that we have him here in Chicago, and that he is a member of this society.

Dr. J. E. Hinkins:

The question the essayist has presented is one of vital importance. I have realized for a number of years that there is a vast difference between the practice of the general practioner and the practice of the orthodontist. It seems to me that when a child is brought to us as general practitioners, the first thing to take into consideration is the temperament of the child, and then its physical condition, arranging our dentistry acordingly. We must meet the conditions as they are presented to us.

In 1894 or 1895 Dr. Case read a paper along the same line of thought, and if I remember correctly he presented some models. Those models have been indelibly stamped on my mind, and I extract very few teeth if I can get along without it, although sometimes it is necessary to extract them. I do so when it is necessary. I have also since that time endeavored to keep the deciduous teeth as long as possible and to preserve the roots. I find that even after the crowns of the teeth are lost and the pulp is dead that by washing them out and painting the roots with a saturated solution of nitrate of silver, it is possible to keep them quite comfortable, although they will get dark. The tissues remain healthy, and we do not have much trouble with pus forming around the roots.

A few years ago I read a paper on the extraction of the first permanent molar, before twelve years of age, and I gave my reasons then for doing so.

Dr. Elliot R. Carpenter:

I feel very much indebted to Dr. Case for the scientific and concise manner in which he has brought this subject before us. There is nothing in the paper with which I can take issue. A year ago Dr. Hinkins read a paper on the first permanent molar, and I noticed, when examining the models, that there was a decided closing of the bite after the extraction of that tooth. Dr. Case commented on that at the time, and again in his paper tonight.

There was another point, and that is the moving forward of the second permanent molar. My observation has been that it does not stop at that time, but that it goes on through life, and it has been my practice in the last three years to bridge over a lot of spaces where a tooth has been lost in adult life, and so stop the coming forward of these molars. I believe that 50 per cent of the cases of pyorrhea are caused by malocclusion, due to the forward movement of bicuspids or molars as the result of extraction.

Dr. J. W. Wassall:

Dr. Case and his brethren in orthodontia are peculiarly situated to be critics of the whole profession. They are in an advantageous position to see the errors we all make, and we must listen to their views with a great deal of respect. While I am of the opinion that the profession, as a whole, is not in the habit of extracting temporary teeth, still I think we cannot listen to this paper without being spurred on to take greater pains to preserve the temporary teeth from loss. We must not be indifferent when we see them passing away from caries or from the fact that the patient is unmanageable, or because parents think they are the first teeth and therefore of no consequence. We are heartened by listening to such a paper, to become more determined to go ahead and preserve these teeth, because the results otherwise will be disastrous.

The main point in the paper is that the loss by extraction or caries of the temporary second molar permits the first permanent molar to come forward, thereby making trouble all through life.

Dr. Robert H. Good:

I have always thought the better temporary teeth are cared for, the less would have to be done for the permanent ones.

Dr. J. P. Buckley:

I was very glad indeed to have an opportunity to hear this very excellent paper by my old teacher, and I am glad to have the privilege of being here with you this evening.

Inasmuch as the theme of the paper seemed to be the preservation of the deciduous teeth, it may not be amiss to speak on that subject. It seems necessary to preserve these teeth until the permanent teeth erupt, even though the pulps are dead and in a putrescent condition. I will tell you how I treat those little teeth, although it may not be anything new. I do not want to extract them, one reason being that I do not want to hurt the litle patient. The best thing to do is to treat the abscess. First getting the confidence of the little patient, I take a bur and make an opening into the pulp chamber. Then I place a pledget of cotton into the opening. On a slab I mix precipitated calcium phosphate and the formo-cresol remedy, which I make into a good stiff paste. On the other end of the slab, I have the cement all ready. Then take the cotton out of the cavity and with warm essential oil water thoroughly wash out the cavity. Now dry the cavity and keep it as dry as possible. Then put in the paste, pack it down gently into pulp chamber and cover it over with cement. If wanted that tooth to last for two years or three, I could have my patient come back, or even in the same sitting, I can remove the surplus cement and put in an amalgam filling. It does not make any difference how much pus there is around those roots, if you see the patient the next day, the abscess will be healing and it will remain healed providing, of course, there be no bone complication.

I have used that method for three years, and had only one tooth go back on me, and that was because I could not do as I wanted to do. I have learned something tonight from Dr. Ames, and that is that a root will not be absorbed after the pulp is dead. Is that right?

Dr. Ames:

My observation is that they do not absorb at all.

Dr. George W. Cook:

I appreciate very much the excellent paper that Dr. Case read tonight, and it cannot be otherwise than a great help to those of us who are in general practice. The preservation of the teeth is the principal function of the dentist, not to extract them, and while necessity may sometimes demand extraction, I see practically no reason, ordinarily, for extracting a deciduous tooth, although sometimes we are forced to do so against our better judgment. If we can preserve these teeth, as Dr. Good said, we will have less trouble with the permanent teeth in the future. I saw a little girl who had been under Dr. Ames' care for some time, when he was in practice. I was agreeably surprised to find that he had filled some deciduous teeth, evidently in a putrescent state, with oxyphosphate of copper. The teeth were black, but the tissues were healthy. I had to extract some of these teeth, on account of lack of absorption to permit permanent teeth to get into position. If everyone did what Dr. Ames did, there would be no question as to what we could do in the preservation of roots.

Dr. Case (closing the discussion):

The principal object of my paper was to emphasize the importance of preserving the deciduous teeth by showing how nature has worked to preserve them, and also to show how in the loss of deciduous teeth the antero-posterior relations of the permanent teeth will be affected. It is not difficult to understand that by allowing, or causing, a first permanent molar to erupt forward of its normal position in the arch, that all the adjoining permanent teeth will occlude mesial to normal, etc., as outlined in the paper. It therefore seems strange to find so many good dentists permitting the loss of the deciduous molars, and even extracting them unnecessarily.

Dentists as well as the people, should be educated to preserve the deciduous teeth as long as possible up to the time of the eruption of their successors. If the adjoining permanent teeth erupt in mal-position, that is no excuse for extraction. Nor is it an indication for extracting the permanent teeth however mal-aligned or irregular, because they can always be placed in the arch, and in normal occlusion if needed to bring about harmonious relations.

I wish to thank the gentlemen who participated in the discussion, for their very complimentary remarks, and for showing so much accord with the teachings of the paper.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States, its possessions and Cuba and Mexico. Canada, $1.40. All other countries $1.75 a year.

EDITORIAL.

AN ENDOWMENT NEEDED.

In this humanitarian age, when so much is being done by men of wealth for the betterment of the people through the medium of libraries, institutes of technology, contributions to universities and colleges, and endowments to medical pathological laboratories; when literally hundreds of millions of dollars are being distributed for education and investigation with a lavishness never before dreamed of in the history of the world, it seems passing strange that it has never occurred to any of our wealthy philanthropists to endow a laboratory for original research work in dental diseases. That there is an urgent need of such a laboratory no one can question. So many problems confront us in every-day practice that the conscientious dentist must hang his head in mortification at his inadequacy to meet many of them. And yet it is not the fault of the individual dentist. The men of our profession are as discerning, as painstaking, and as conscientious as are those of any other. They want to do the very best service they can for humanity, but they are handicapped by the fact that science has not yet shown them the significance of many of the pathological conditions with which they are daily confronted.

All the light we now possess has been gained by the untiring efforts of men in the profession who have delved into the mysteries confronting us at a great personal sacrifice of time and money, and while it must ever be true of all scientific investigation that the spirit of original research, the impulse to do the thing for the pure love of doing it, is the essential factor, yet we cannot close our eyes to the stubborn fact that it requires money to carry on experiments. In the very nature of things, men of a scientific trend of thought seldom have much money, and it is not putting it too forcibly to say that the lack of money has often been a serious handicap to scientific progress.

Given an adequate fund for the establishment and endowment of a suitable laboratory where men could go and work untrammeled by the gnawing thought of meeting bills, and the scientific phase of our profession would receive such an impetus that the people of the world who are suffering from dental disorders would soon be better served. And this is the ultimate object of all our research work—to better serve the people. The aggregate of suffering that could be prevented or relieved through the agency of the knowledge gained by original research properly conducted can never be computed, and if there is a more worthy object for the consideration of men of wealth than the one of creating comfort and relieving pain, it has yet to be discovered.

The condition of the mouth and teeth is more and more being recognized as a very important factor in the maintenance of health, but its full significance has not yet been sufficiently realized by either the dental or medical profession. It is safe to say that every year thousands on thousands of individuals have their lives materially shortened, and in many instances summarily ended, through the influence of dental disorders, and when the significance of the mouth in its relation to disease is thoroughly understood, many of these lives will be saved.

The time is now ripe for active measures along these lines. The spirit of research is among us, and all we need is material aid to enable us to carry out a beneficent work for the betterment of humanity.

WHY DO CEMENT FILLINGS DISINTEGRATE?

The question raised by Dr. A. C. Hewett in the July DENTAL REVIEW regarding the solution of cements in the mouth brings up the query once more as to the precise *modus operandi* of the failure of this material when used to fill teeth. We know that it is variable in its behavior, that it lasts much longer in certain cases than in others, and that its disintegration is not solely due to mechanical wear. There must be something of a chemical nature to account for its solution, but just how this process is carried on we have never been clearly told. The powder of cement is made up of granules, and it is difficult to believe that these granules are soluble in the fluids of the mouth. When glacial phosphoric acid is added to the granules a chemical action takes place which results in crystallization of the mass. Does this change the character of the granules themselves, or are they merely cemented together by the acid? If the granules are not changed by the crystallizing process, then the failure of cement must be due to the solution of the medium which glues the granules together. If this is true, what particular element in the fluids of the mouth must be held to account for this solution? We have been told that the reaction of the saliva has everything to do with it, but this does not answer the query as to how the process is carried on. Let someone who has carefully observed the phenomenon of cement wasting, and who has the chemical knowledge necessary for an explanation, rise up and give us the detailed process of the disintegration of cement fillings.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

To Remove Hardened Plaster From Bowl:—If the waste plaster left in the bowl has become hard and difficult to remove, fill the bowl with water, leave a moment, empty out the water, and the hardened mold of plaster may be easily removed from either a rubber or porcelain bowl.—*G. W. J.*

Treatment for Hemorrhagic Diathesis:—It seems to me that in cases of hemorrhagic diathesis it might be well to prescribe Thyroid Gland Ext. a week or so before an operation is attempted, as it seems to increase the plasticity of the blood, and in that way lessens hemorrhage.—*C. H. Oakman, Detroit, Mich.*

Be Honest With Your Patient:—We must at all times consider the financial rating of our patients. Should the party be a laborer, with small compensation, it is not justifiable for us to involve expenditure that can be avoided, but do the work necessary with all the skill at our command, thus consulting the patient's interest.—*E. B. Strange, Hillsboro, Ill.*

License Exchange:—The importance of the subject of license exchange between states is such that any man, whatever his standing, should deem it an honor to do something toward equalizing the standing of dentists in the various states. Please don't feel satisfied that you will never need a change of location. It may pinch you as it has others.—*F. R. Houston, Green Bay, Wis.*

Examinations:—If our State Board Examiners would get in closer touch with the dental schools and learn something about the different candidates who are seeking licenses to go out and practice, the interests of the profession and the interests of the people would be far better served, instead of having men who know nothing about these candidates sitting in judgment as to what they can do.—*Don M. Gallie, Chicago.*

Antral Empyema:—In all cases of acute or chronic antral empyema, also with cases of clear dental etiology, it is the duty of the dentist to require the diagnostic help of the rhinologist and to secure the investigation of possible nasal etiological factors or nasal complications. Without determining this, the dentist runs the risk of never curing uncombined antral empyema.—*Herman Stolte, M. D., Milwaukee, Wis.*

Submarine Fillings:—As a rule I do not approve of submarine fillings, but when they are necessary, tin and gold is the best material for filling such teeth. I do not mean a cavity that is full of saliva, but it is impossible to keep children from putting the tongue into a cavity during its preparation, thus moistening it. Before any one attempts to do this work, it is advisable to practice on extracted teeth to get the experience.—*J. R. Callahan, Cincinnati, Ohio.*

Applying Silver Nitrate:—In the use of strong solution of nitrate of silver it is necessary to neutralize any of the solution which escapes from the confines of the area intended for its reception, for nitrate of silver solutions, except the very weak ones, are escharotic. For such purpose I am in the habit of flushing out the mouth with a solution of common salt, say 50 per cent, but most any strength will do. In that way the insoluble silver chloride is formed. Silver chloride when dry has a sandy consistency, so that it should be well washed out of the cavity. For erosions or exposed surfaces where the silver nitrate must be limited, I am in the habit of using the stick, or "lunar caustic."—*Otto Holinger, Chicago.*

Sealing Glass Stoppered Bottles:—Much inconvenience has been encountered by evaporation of chloroform, alcohol, etc., from preparations which are held in solution by these solvents. This is particularly true if the receptacles in which such preparations are kept are corked with ground glass stoppers, as this kind of stopper does not in all cases effectually seal a bottle. The escape of solvents may be largely prevented, thereby holding the preparations in solution a longer period, by smearing a small quantity of vaseline over the ground surface of the cork. The vaseline not only fills up the minute openings between the cork and bottle, but it acts as a lubricant, and thus prevents the cork from becoming sealed to the bottle.—*Emerson Cunningham, Parry Sound, Ont.*

Prescribing Drugs:—The enormous increase in the use of the coal tar headache cure preparations that are having such a deleterious effect upon the heart's action, calls for strenuous action upon our part in educating our patients to know the evils, so that they may take due notice and govern themselves accordingly. Acetanilid and its kindred preparations, if properly used, have a large field of usefulness, but if abused they become engines of mighty destruction. Of course, there are times in our practice when whiskey or even some of the opium preparations or other sedatives, are invaluable, but too great reliance upon such drugs weakens the patient, both physically and mentally, and it behooves us to be on the alert and to know when to give and when to withhold these dangerous drugs.—*C. P. Pruyn, Chicago.*

Mixing Porcelain:—In making the mix a misconception occurs which is fatal to the best results and the greatest density of porcelain, and that is to jar the body into place as is usuallly done. When a mass of wet porcelain is jarred it causes air bubbles to settle toward the bottom of the mass, and the more it is jarred the larger are the bubbles. This may be proved by placing porcelain on the end of a spatula and jarring it. Then examine it with a glass and it will be found full of bubbles near the bottom. Porcelain should be gently pressed or wiped into place with a spatula in such a manner as to constitute a burnishing of the porcelain. When built up in this way it is very dense and strong and there is little shrinkage in fusing it.—*Louis Ladewich, Chicago.*

Laboratory Work:—Dentistry is reaching the point where only those operations which are absolutely necessary are performed in the mouths of the patients. We are trying to protect our patients from unnecessary "mouth manipulation." Work which may be successfully performed outside of the mouth is taken to the laboratory. The laboratory, however, should be convenient to the operating room so that, whoever performs the work, the operator can supervise it. No one knows what is required for a completed prosthetic appliance so well as the operator who studies the conditions in the mouth. The bulk of the work may be done by an assistant but the critical stages should be supervised by the operator who knows, or should know, what is required in every detail of the work to produce the most useful and artistic results. The operators who are too busy at the chair to superintend the construction of their prosthetic cases should send such cases to one who can give them the attention necessary.

G. W. J.

Remuneration for Services:—A man in difficulty with his neighbor over a question of property, may choose his attorney, but is not in position to determine the value of the attorney's advice, nor choose what it shall be. He cannot buy of his attorney. He may accept the service and pay the fee, but the attorney determines the character of the service. The sick man or his friends may choose a physician, but the physician must determine step by step what the treatment must be during the progress of the case. While he is by usage entitled to his fee, there is no question of barter in the service rendered. His obligation is to use his full energy and the best judgment for the benefit of his patient independent of any other consideration. So also the dentist ministers to the ills of man in his legitimate field. The object of his special education is to fit him for determining that which will most certainly give freedom from suffering and best fit his patient for future usefulness. The patient can no more determine what this may be than the man who is sick with a fever can determine the medication suited to his case. He must depend upon his dentist. The professional man doesn't advertise or sell; he serves; he uses his mental endowment and special training to relieve the difficulties and distress of men, and for the benefit of society or of the state.—*G. V. Black, Chicago.*

MEMORANDA.

INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association has begun active work in preparing for a Semi-Centennial Jubilee meeting to be held in Indianapolis, June 4-5-6, 1908, celebrating the Fiftieth Anniversary of the State Association.

Yours truly,
D. A. HOUSE.

MONTGOMERY COUNTY DENTISTS.

The dentists of Montgomery County, Illinois, met June 14 and organized a dental club to meet monthly for original research, and to unite on a uniform minimum fee bill. They purpose keeping a black list for the county containing the names of dead beats. Aside from the relief of pain no work will be done for those on this list till old accounts are settled. All the dentists of the county have joined the club except two, and these are expected to join. The object is to so conduct dental practice in this county that there will be no cutting of fees or other underhanded methods, and that the general character of dental service will be improved.

NORFOLK, VA., June 24, 1907.

Editor THE DENTAL REVIEW, Chicago, Ill.

Dear Doctor: In view of the statements that have gone out in relation to the lack of accommodation and high hotel charges in the vicinity of the Jamestown Exposition, we, the Virginia members of the Organization Committee of the Jamestown Dental Convention, deem it wise to make a formal statement of the situation, that the members of the profession who contemplate attending the convention at the Jamestown Exposition, Norfolk, Virginia, September, 10-12, may not be mislead or deterred in their purpose.

We append a list of some of the leading hotels and their rates per day.

In order to secure these rates it will be necessary to make reservations not later than August 15th.

The Inside Inn, with a capacity of 3,000 persons, will be the official headquarters of the convention. The following are the rates of the Inside Inn:

European Plan, without bath, two persons in a room, which includes breakfast, privileges of the Inn, and admission to the Grounds after the guest has registered at the hotel, $2.50 per day, for each person. If room is occupied by only one person, the rate will be $3.50 per day.

American Plan, without bath, two persons in a room, which includes breakfast, privileges of the Inn, luncheon, and our $1 evening Table D'Hote dinner with wine, admission to the Grounds, after the guest has registered at the hotel, $3.50 per day for each person. If room is occupied by only one person, the rate is $4.50.

The rates for rooms fronting the sea, or the sea and pine grove:

American Plan, if room is occupied by only one person, the rate will be $6 per day. If room is occupied by two persons the rate will be $8 for the two persons.

American Plan, with bath and toilet, $8 per day for one person in a room, if room is occupied by two persons the rate will be $10 for two persons.

The following is a partial list of Norfolk and Portsmouth hotels—Algonquin Hotel, Granby st. and College pl., $1 per day and up; Atlantic Hotel, Main and Granby sts., $1 per day and up; Colonial Hotel, 202 Granby st., $1 per day and up; Hotel Fairfax, City Hall av. and Randolph st., $1.50 per day and up; The Monticello, City Hall av. and Granby st., $1.50 per day and up; Gladstone Hotel, Main and Nebraska sts., $1 per day and up; Haddington Hotel, Granby st. and City Hall av., $1 to $3 per day; Hotel Savoy, Granby st. and City Hall av., $1 to $3 per day; Carolina Hotel, Atlantic and Plume sts., $1 per day and up; St. Denis Hotel, Main st. and Roanoke av., $1 per day and up; Terminal Hotel, Plume and Atlantic sts., $1 per day and up; Henry Seelinger, 39-41 City Hall av.; Lynnhaven Hotel, Freemason and Granby sts., $2.50 per day and up; Union Hotel, 35 Brewer st., 50c. per day and up.

Stag Hotels—The Lee Stag Hotel, 97 Bank street, $1 per day and up; McDonalds, Main st. and Commercial pl., $1 per day and up; Victoria, 359-361 Main st., $1.50 per day and up; Henry Seelinger, 39-41 City Hall av.

Portsmouth.—Hotel Monroe, Court and High sts., $1 per day and up; Hotel Fairfax, Crawford and High sts., $1 per day and up; Pearson Hotel, High and Water sts., $1.25 per day and up.

In addition to the hotels named above, there are hundreds of private boarding houses and rooming houses, at which visitors may secure accommodations at reasonable rates.

We will thank you very much to give the above information as wide publicity as you can through your esteemed journal.

Yours very truly,
R. H. Walker, Norfolk, Va.
F. W. Stiff, Richmond, Va.
H. W. Campbell,
Sec'y Organization Committee.

RECENT PATENTS OF INTEREST TO DENTISTS.

854,283. Dental root impression and crown-mounting instrument. John M. Evey, Monmouth, Ill.

854,486. Display-carrier for artificial teeth. Joseph F. Gibson, York, Pa.

853,984. Tooth crown model. Chapin F. Lauderdale, Milwaukee, Wis.

854,116. Toothpick machine. George P. Stanley and W. W. Tainter, Dixfield, Maine.

855,288. Handpiece for dental engines. Frederick W. Dean, Des Moines, Iowa.

854,898. Mouth brace. Hans Lorenz, Rochester, N. Y.

854,842. Artificial tooth. Joseph Ramsperger, York, Pa.

855,875. Dentimeter. Joseph Bode, Philadelphia, Pa.

856,034. Manufacturing dental fillings, inlays and crowns. John N. Crouse, Chicago, Ill.

856,884. Attachment for dental articulators. Milton H. Knapp, Saginaw, Mich.

38,620. Design, side frame for dentist and barber chairs. James Barker, Philadelphia, Pa.

857,339. Dental plate swage. Grant E. Freeborn, Belfast, N. Y.

857,240. Dental tray. James A. Henning, Beardstown, Ill.

857,414. Tooth-powder box. Walter H. Perkins, Waterbury, Conn.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

COLLEGE COMMENCEMENTS.

UNIVERSITY OF MICHIGAN COLLEGE OF DENTAL SURGERY.

Graduates.—J. W. Anson, I. C. Ashley, F. A. Beyer, C. L. Bliss, G. W. Callahan, P. A. Chesterfield, L. G. Clapper, W. A. Cook, H. M. Dixon, J. S. Donaldson, L. V. R. Drake, I. A. Eppstein, R. G. Fralick, M. L. Gardner, R. G. Gix, F. S. Granger, R. W. Heath, Guy Truxell Katner, C. L. Keyes, H. H. Landes, J. H. Linsley, H. E. Loeffler, L. K. Mobley, F. T. Morse, L. D. Mount, M. T. Mount, W. J. Neelands, M. J. O'Neil, H. C. Pollock, M. Raabe, C. G. Riep, M. C. Ruen, C. B. Smith, G. H. Smith, J. C. Smith, A. J. Stamp, C. E. Swain, M. E. Thompson, A. Vyn, E. Wagner, H. T. Wallace, G. G. Ward, L. R. Weinig, W. W. Whipple, W. E. Wilson.

NORTHWESTERN UNIVERSITY DENTAL SCHOOL.

Graduating Class.—A. C. Agern, H. E. Agar, D. A. Akin, L. C. Allender, C. N. Barrett, E. J. Bast, A. P. Baur, C. E. Bell, A. G. Bergman, A. B. Bloom, R. M. Bolton, D. J. Brass, A. M. Bressler, C. Brockman, E. A. Brown, G. E. Burket, A. D. Bushnell, W. P. Carroll J. M. Casler, M. A. Cassill, G. Chappuie, L. K. Concklin, W. T. Conley, O. I. Cook, O. J. Courtice, N. W. Cox, E. R. Danforth, D. D. Drake, D. D. Fisher, J. E. Forsyth, O F. Foster, J. D. Frankel, M. Grossman, G. R. Heap, A. C. Hess, A. F. Johnson, J. E. Johnson, O. V. D. Jones, B. L. Kelley, W. S. Kennedy, C. H. Kerr, J. A. Keyes, D. B. Keyser, G. G. Kimball, H. P. Kindt, A. C. Koenig, G. A. Landee, H. E. Lawver, A. B. Lee, A. B. Linne, J. H. Long, R. E. Longwell, D. W. McKenna, A. C. McLaren, P. Mahony, W. C. Mason, T. P. Merchant, F. Metecalfe, T. Miller, H. C. Mitchell, C. L. Mitten, C. A. Myers, A. W. Myles, L. L. Norris, R. E. Owens, A. W. Pailthorp, R. E. Pfouts, W. B. Power, C. A. Rasch, O. R. Rice, J. E. Richmond, S. M. Rightman, F. Rodgers, A. T. Ross, H. S. Scranton, H. L. Sedwick, T. Shuttleworth, H. D. Snyder, G. B. Sommervill, K. R. Spearman, W. A. Squires, A. G. Thomas, G. A. Thompson, L. R. Van Sant, J. L. Wehrheim, J. J. Wilson, P. W. Winthrope, J. H. Wipf.

The following have pursued the course with credit, but for reasons of a technical nature, the degree can not be conferred at present:

L. R. Johnson, S. McBroom.

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, SEPTEMBER, 1907. No. 9

GOLD FILLINGS VS. INLAYS.*.

BY DON M. GALLIE, D. D. S., CHICAGO, ILLINOIS.

In this age, when progress is the law of life and demands new ideas, it is but natural that the practice of dentistry has undergone many changes in the methods of procedure and means of restoring the teeth to their normal function. Indeed, the science of dentistry is well up in the procession of progress of the arts and sciences. The man whose knowledge rests with the extraction of a tooth, the plugging of a cavity or making of an artificial denture but poorly represents the high ideals of our profession. The dentist of today must be scientific, an artist and an artisan. He must know the pathology, chemistry, bacteriology and histology of dentistry. For they all play an important part in the successful accomplishment of our practical work and it is upon one phase of our practical work that this paper is most concerned. When I accepted the subject of "Gold Fillings Versus Inlays" from the chairman of the program committee it was not my purpose to advocate one method over the other or to claim that one possessed all the virtues and the other all the faults of tooth restoration; instead, it was to present a consideration of the conditions favorable to each, the sphere of usefulness of each, and the limitations that should govern methods of procedure and perchance sound a warning to some who are so prone to follow every new fad, folly and fancy that is presented. This does not apply to the careful, conservative and skilful man who fully appreciates the limitations of all lines of practice, but is meant for the man who accepts new theories and new methods because he hears they are quicker and easier, and to the young man whose experience has been so limited that he is not capable of judging which is the better line to pursue. I believe that the man who does not and cannot make inlay restorations is not giving the service that his patients are entitled to, and I am as firmly of the belief that the man who does not and will not make a restoration with foil is equally guilty. If all practitioners were of the same opinion as the writer there would be no reason for a controversy over the relative merits of each method of filling teeth; but such is not the case; there are a few foil advocates who believe that inlays are a failure, and there are many inlay advocates who say that there is no question but what gold foil is an absolute failure as a saver or protector of tooth structure, and that it will not hermetically seal the cavity. This charge against gold foil is not a new one; it has always had its detractors, who have from time to time introduced new filling materials which were to supplant foil as a tooth-saving agent, but in the fight for supremacy gold foil has vanquished them one by one, until today it is not a contest between gold and a foreign agent but of gold in two different forms. It is but a few years back that the followers of the new departure claimed that gold, in proportion as a tooth needs saving, was the worst material to fill it with; they were led by a Moses who was to take them out of the wilderness, guide them over all the crevices and pitfalls and surmount the crumbling walls of carious teeth and thereon resist the onslaught of the enemy, decay; the failure of that campaign is familiar to us all. There was also a band of misguided ones who claimed that gold and amalgam failed because they did not stick, but who said we will cross the chasm, attack the ruined battlements, and there stick and build a fortification of solid concrete or cement which will hold out against the attack of the microbic host, yet in a short time it was found that this cement protector put up a feeble defense.

---

*Read before the Illinois State Dental Society, May, 1907.

Not to be outdone, the objectors of gold brought forth another material, with a claim to mighty prowess, which would not irritate or shock, but which would hermetically seal the entrance to the battlefield, cut off the source of supplies, and thereby starve the legion of bacteria into surrendering.

Time soon demonstrated that they could not stand the pressure; they became battered and disfigured, and the fate of gutta percha and celluloid was sealed. Foil all this time was continuing to hold its own, meeting with greater success all the time. Soon a new Richmond entered the field, with followers from North, South, East and

West, and while not great in numbers they were loud in acclaim. "We are irresistible; we are unconquerable; we are so similar to the real thing that the parasitic scout will not detect us; we are so smooth and so slippery that the enemy will break their necks or their legs in trying to pass over us, and if by chance any succeed they will meet instant death in the trenches"; after a few skirmishes they began to give way and drop out one by one, and so silica, kalion, feldspar and old zinc phosphate were detailed for picket duty to guard the battlefield, but to leave the brunt of hard fighting to old foil and the new ally, gold inlay. We trust that inlays will prove a reliable and substantial ally, but there are many who are a little skeptical, for they see that our new friend is a little too dependent on zinc phosphate.

Is gold foil a failure as a saver of tooth structure? It is true we see many instances where there is recurrence of decay, and we also see many instances where foil is saving teeth after twenty to forty years' service, to say nothing of the multitude of cases of ten years' standing, and these too in mouths that have not been immune to caries, where there was no idea of modern cavity preparation, no extension for prevention, no flat walls, smooth surfaces or right-angled anchorage to give the filling resistance to stress; no perfect restoration of the interproximal space nor marble-like contact, all of which omissions invite recurrence of decay. Yet with all these defects we find the ravages of decay thwarted by the skilful use of foil. What is true of these old fillings is more than true of the filling of today. Our knowledge of the cause and effect of decay, our superior technique, improved appliances, instruments and material, and the recognition of prophylaxis on the part of our patients insures the stability of our work, and it is ridiculous to say that the filling of today can be considered a failure. For the past few years I have taken particular pains to examine and learn the history of the gold fillings coming under my observation, besides the records of my own work. I have done this for the purpose of learning something about the percentage of failures we hear so much about, and I can assure you that my experience and my observations have strengthened my belief that foil can be depended upon, and while I am today making as many inlays, both gold and porcelain, as the average dentist, it is not because I have lost faith in foil, but because I believe the inlay has its place. Let us now consider the class of cavities that call for foil and inlay, commencing with the six upper anterior teeth, and in these teeth we find the ideal cavities for the porcelain restorations; ideal from the esthetic standpoint and ideal for the reason that many of the cavities are so located that the restoration is not subjected to stress, yet in these same teeth there are cavities and conditions that warrant the use of foil.

Porcelain is indicated in the following:

Labial cavities, those involving the gingival region and those that are found as structural defects, such as pitted teeth. Large mesio-proximal cavities that extend well to the labial and some distal proximal that involve the labial surface, the mesial cavities being more in direct line of vision, especially call for porcelain.

Cavities that involve the whole incisal section of the tooth, such as are caused by imperfect development, and involving from one-third to one-half of the crown and a small percentage of proximal cavities involving the incisal angle. These latter are the most difficult to handle. This is equally true of foil and porcelain. The thickness of the incisal edge and the bite are important factors in these restorations. The inlay in this class of cavity is only possible at the great expense of tooth structure; it necessitates a great cutting away of the lingual surface to give resistance form to seat the inlay, and even then there still remains the vulnerable point at the incisal, where there is liable to be fracture of the porcelain, permitting food stuffs and fluids of the mouth to find lodgement in the crevice, to say nothing of the annoyance to the tongue and the unsightliness of the defect. My observations lead me to believe that a much greater percentage of the inlays in this class of cavities fail than gold or gold and platinum. With the foil restoration we get the maximum of resistance, with a minimum sacrifice of tooth structure; with the aid of the screw anchorage at the incisal or the incisal step at right angle to the proximal surface we can make a restoration that will stand the force of occlusion, that will not chip at the incisal, cannot be forced from the axial wall, and the so-called unsightliness greatly overcome by the use of gold and platinum. Foil is indicated in many of the smaller proximal cavities where perfect cavity lines can be obtained without cutting as much as is required for the inlay. This is especially true of distal cavities, indicated in those proximal cavities that do not show from the labial but extend well on the lingual. In these cavities a porcelain restoration is liable to marginal fracture, and the enamel margin is also menaced by the stress and impact of the lower anterior teeth. A typical example of this class is found in the disto-lingual surfaces of the cuspids. Incisal restorations made necessary by attrition should be made of gold or gold and platinum, preferably the latter, since anchorage can be obtained without much sacrifice of tooth structure, and when finished we have a filling that in every respect is satisfactory even to the eye of the most esthetic. There remains one more class of cavities in these teeth, and they should be filled with foil—namely, the pits on the lingual surface. The treatment of cavities in the lower six anterior teeth is a modification of the upper, the size of the teeth, the location of cavities, call for a more general use of foil than porcelain.

There remains one more class of cavities, and we leave the domain of porcelain. It is only a few years ago that the porcelain enthusiast told us that this domain included thirty-two teeth and 160 surfaces. These cavities are found at the gingival third of the buccal surfaces of the bicuspids, and their treatment in a majority of cases calls for porcelain.

Let us now enter the field disputed by the gold inlay. Since this paper was started one of our own members has invented a method of making these restorations and has demonstrated beyond doubt that they can be made perfect and most beautiful. His genius and skill enlarges the field of usefulness of the inlay and brings it up to a standard that makes it worthy of a place alongside foil. We will first consider the cavities in the buccal surfaces of the molars. Many of these are small and can be prepared and filled in a few minutes with foil, but there are many that involve the gingival third, sometimes to half the surface and extending far under the free margin of the gum. Adjustment of the dam is impossible. The best service we can render here is the inlay and sometimes even the much-despised amalgam. The percentage of failures in occlusal cavities is considerable, due entirely to faulty cavity preparation and careless manipulation of the filling material. These cavities are caused by structural defects, and if these defects are entirely obliterated and the margins of the cavity extended in all directions sufficiently to insure a perfect finish of the filling with the tooth surface, the enamel margins properly beveled, the gold perfectly adapted against all walls and uniformly condensed, we will have a filling that should endure forever. These simple occlusal cavities I believe call for foil in preference to the inlay. The cavity preparation is similar for both, with the exception that for the filling we can give retentive form by slightly grooving along the two strongest walls; for the inlay the surrounding walls must taper slightly from the pulpal to the occlusal surface, to permit the removal of the matrix without distortion, and it must depend entirely on the cement to prevent displacement. The sealing area is so small and the film of cement so minute that it is not sufficient to withstand the impact of occlusion. There is a class of occlusal cavities for which the inlay is admirably fitted; they are extensive, involving the whole surface, and often a large portion of the buccal. They are caused by the neglect of the ordinary structural defects, and those caused by imperfect development of the occlusal third of the crown. In these we can get depth and breadth for the seating of the inlay; the weak and unsupported walls can be ground down so that the matrix can extend over them; the overlap can be burnished over the margins, acting as a protector of the cement and a reinforcement of the whole tooth. The cusps can be reproduced either by swaging or sweating, and the whole operation made a reasonably permanent and artistic success.

We now come to the class of cavities that require our best efforts and greatest skill—cavities that I may say cause us more humiliation and embarrassment than any others. This is the proximo-occlusal cavity, and it is over the treatment of these cavities that the battle of pen and tongue is at present waged, as to whether they should be filled with foil or inlay. The inlay radical claims all the honors and virtues, declaring that in these cavities foil has been such a failure that its use should be discontinued. The foil worker, modest and conservative, justified by history, believes that the average proximo-occlusal cavity that we see day in and day out should receive the foil filling. It is indeed true that a great many of these restorations, and this applies to all kinds, are failures, and what is the cause? Is it because foil was used, or cement intervenes between filling and tooth wall? Or because heat and cold had been conducted to the pulp? By no means. The main reason for these failures is that no effort was made to remove or combat the conditions that were responsible for decay. The cavity was found in an unclean environment, was prepared, filled, and left in the same environment. In the form of a narrow slot it was carried from a concave gingival wall to the occlusal surface, there to be met by decay from structural defects on that surface. The defect was allowed to remain. No cavity preparation along mechanical lines; filling retained by buccal and lingual grooves. How could a filling like this endure, what was done to prevent recurrence of decay? Would the inlay with its cement ally do any better? What are the foil workers doing to prevent these failures? Just what the inlay advocate is doing—first obtaining sufficient separation to reproduce the original mesio-distal diameter of the tooth when the filling is in place, which will permit of a perfect restoration and preservation of the interproximal space. The cavity is extended in all directions, free from the unclean surroundings. The narrow slot is made broad bucco-lingually; the gingival wall is broad and flat, bucco-lingually, and as broad mesio-distally as the pulp will permit; the buccal and lingual walls smooth and at right angles to the gingival and axial, and running parallel from the gingivo-lingual and gingivo-buccal angles to the proximo-occlusal angles, unless the shape of the tooth demands a slight converging at this point, which is not possible for the inlay. The structural defect in the occlusal is removed by a step through that surface broad and deep enough, and slightly dove-tailed bucco-lingually to give perfect resistance form, and allow a sufficient amount of gold to withstand the stress of mastication. With the enamel margins beveled, and that with an intelligent understanding of the position and direction of the enamel rods, we have a cavity with smooth flat walls, no inaccessible undercuts, and all angles and margins in perfect view. There is nothing to prevent the perfect filling of this cavity, of getting perfect adaptation against these walls, unless it is that the operator is ignorant of the properties of gold and the use of the plugger. Non-cohesive or soft gold should be used for the gingival portion. With gold in this form we are able to get absolutely perfect contact against the walls, angles and margins most susceptible to recurrence of decay; the remainder should be filled with cohesive gold in any form preferred by the operator. The placing and malleting of the gold is a most important factor. I believe that the cause of many failures can be attributed to improper placing of the gold. The knack of adapting and condensing gold by hand pressure is familiar to few. Were it more generally adopted, I believe we would have fewer failures. The finishing of these fillings is not the tedious and distressing operation that it is pictured. The carrying of our margins well to the buccal and lingual makes the finishing of these margins very easy; the intelligent use of the saw and strip soon finishes the gingival; the broad step on the occlusal soon gives way to the stone and disk, and the whole operation from start to finish seldom takes over an hour, and when complete we have a filling in perfect contact with tooth surface, with enamel prisms safely guarded, seated so that it resists stress and not dependent on the fickleness of cement to hold it in place. Unfortunately we find in these bicuspids and molars cavities that involve so much of the tooth surface that a foil filling would be beyond the endurance of the patient and operator, and in many cases impossible—so extensive that a plastic filling or the gold crown formerly were the means of restoring them to usefulness. Now the inlay receives them, and it is the undisputed champion in this field.

So far we find that the inlay and the foil workers are not so far apart; they both strive to reproduce or improve on the original tooth form. Cavity preparation is practically the same. But they differ in the means of holding the restoration in place, and the exclusion of moisture, one pinning his faith to perfect adaptation and contact of material, the other on the cement lining. Now, does cement do all that is claimed for it? We know that in some mouths it will give splendid service, while in others it is practically useless. We know that one cement will stand well, while another will fail in the same mouth. We even find that two fillings of the same cement will act differently in the same mouth. Does it not act the same in inlay work- The cement manufacturers in their directions of how to mix to get best results advise the thorough spatulating of the cement until it assumes a putty-like consistency. To do this the fluid must take up a certain amount of the powder. This same cement is used for inlay setting. It must be mixed to a creamy consistency. We do not incorporate nearly as much of the powder in the liquid, and consequently do not get the proportions that the directions claim give us the best results. Does this difference of the amount of zinc oxide weaken the adhesive qualities of the cement? It is said that cement around an inlay only dissolves to a depth equal to half the width of the cement line. What authority is there for this statement? Have any scientific tests been made to substantiate this, or is it only a guess? Is it a case of the wish being father to the thought? Suppose we have only this minute channel; does it not leave the enamel rods unprotected? What is to prevent recurrence of decay around this crevice, and what prevents the enamel prisms from dropping out? We hear that no bacteria can live in this purifying ditch. Have we any reliable proof of this, or is this also a guess? We are told that this condition applies only to the porcelain inlay; that the platinum matrix stripped from the restoration permits that thickness of cement; but that the gold inlay fits so accurately that it practically comes in absolute contact with tooth surface. Poundstone, in his tests, found that the mixed cement is not in a perfect solution; he finds there are granules that do not dissolve and if the inlay fits accurately these coarse granules are carried to the bottom of the cavity, and will not permit the inlay to go closer to tooth surface than the thickness of the largest granule, and allows only the thin cement to come to the surface and over the margins. Now it is further said that the thinner the film of cement between inlay and tooth surface, the stronger it is; that in this form it possesses its strongest adhesive qualities (it has been compared to glue), and that it cannot break at the cemented joint. How is it then that so many inlays become loose? You will say because the cavity was not properly prepared. These inlays loosen in cavities of perfect form, and they are not rare. I see them every week and they are not all mine.

It may be that cement mixed to the creamy consistency necessary for inlay work is most adhesive in this form were it allowed to harden undisturbed, but this is hardly possible under inlays that are subjected to stress. Before the cement becomes set the 100 to 300 pounds pressure exerted by the jaws disturbs the setting, and I believe breaks up the adhesiveness, and attachment to the inlay or tooth surface. I have mixed a great number of the different cements, and have had ten other dentists mix them just the way they use it for inlay setting; it was then poured in tiny molds, and allowed to set. I found that the time of hardening varied greatly in every particular. Some of these little molds did not harden in twenty-four hours. Some required fifteen, ten and so on, down to one hour. Now this may be a very crude test, but it is no more crude than the way we mix our cement for this work, and I believe the process of setting is similar under the inlays to those little molds; if this is true, I think we can account for so many inlays becoming loose. This little crude test demonstrated that cement is a very uncertain proposition; that it is not a consistent performer.

One claim made for the inlay is that the conductibility of heat and cold is broken up by the thin film of cement; this is partly true, yet I see many inlays that are troublesome in this respect. We also can reduce the conductibility of thermal changes to a minimum in the gold filling, by the use of any of the cavity linings, and a lining of cement over the pulp.

I do not find the question of conductibility a very serious one, and would not be influenced for this reason alone to adopt the one restoration over the other, but many inlays are perilously near the pulp, and I am afraid that those doing the extensive cutting that some inlays demand will have trouble in time with some of the pulps under the inlays. Now, the whole question of filling versus inlay should be governed by horse sense and judgment. When the conditions warrant the use of the inlay, let us use every care and all the skill at our command to aid in proving that it is something we can depend on, and let us also continue to use foil where it is indicated. Keep your pluggers in a handy place, for remember they are responsible largely for our successes in the past.

THE SEQUEL OF INLAYS.*

BY E. A. ROYCE, D. D. S., CHICAGO, ILL.

The advent of inlays has without doubt given the profession another and a very valuable method of saving teeth from the ravages of decay. That the inlay has come to stay is beyond question. That it is the best filling where it is indicated all will concede, but that what is known as the inlay is indicated and should be used in all places and under all circumstances I doubt, and I flatter myself that I have good company in this opinion.

The many fillings that come to our notice which have been in place for years, prove that when indicated, a gold filling properly inserted will give a remarkably good account of itself. The claim is made that inlays will preserve teeth from decay better than any other filling we have at our command. That this claim is made is shown by two examples which have been very recently published. The first is from a paper read before the Eastern Indiana Dental Society by Dr. F. R. Henshaw, in which he says: "I believe that the investigations of the past few years have established one thing above all others in regard to inlays—that there is less likelihood of decay at a carefully fitted inlay margin protected by cement, than at the same margin under any other circumstances. If there is no other reason for the insertion of inlays the operation is justifiable." Another example is given in THE DENTAL REVIEW in which Dr. Wilhelm Thiersch, of Geneva, Switzerland, credits the inlay when cement intervenes between it and the wall of the cavity with a decidedly better resistance to the penetration of eosin than a gold filling. As in these cases you will find the claim constantly made that the inlay is the best tooth preserver we have.

---

*Read before the Odontological Society of Chicago.

Now it is to be noted that in each of the cases cited the writer carefully states that there should be a layer of cement between the inlay and the wall of tooth substance. I have met inlay workers who claimed to be able to fit a gold inlay to a cavity closer than a gold filling could be fitted. When asked why they cemented the inlays, if the adaptation is more perfect than that of a gold filling, the reply has been that the cement is used because they want it in the cavity. The fact is that the entire dependence of the inlay worker for the preservation of the teeth is upon the cement, and the inlay amounts to nothing more than a method of preventing the disintegration of the cement so far as decay is concerned, and to the cement belongs all the credit for the preservation of the teeth that is given to the inlay. The insertion of the cement in such a condition that it will flow easily, and then driving it to place by a comparatively large force, using a solid nicely filled inlay for a plunger, forces the cement into all the inequalities in the walls of the cavity, not only closing the orifice but at the same time absolutely sealing the dental tubules. Undoubtedly this method of introducing cement will stop a cavity much more thoroughly than the same cement would if manipulated in the ordinary way. For this reason it would seem that the usual method of introducing cement into the cavity can be greatly improved upon. I need not tell you of the usual method, but will second what Dr. Ames said in a paper read at one of the Eastern societies some time ago, which is, that in most cases if a little cement is placed upon the walls of the cavity while the mix is comparatively thin, and after adding more powder the harder mix is forced to place in the cavity, forcing the soft cement into the most remote corners of the cavity and working the mass to place, a very perfect filling can be made.

Many of our cement fillings fail because of lack of adaptation to the walls of the cavity.

Cement forced to place by some thicker or heavier material has proved such a good tooth saver that I have used it under amalgam for a number of years, and have found it of immense value. All who have made tests to find the working qualities of amalgams agree that considerable care is necessary in inserting the filling to make it at all durable. This being the case it seems good practice to use the amalgam as a protector for the cement, as thus one can be sure of perfect adaptation to the cavity walls, but in using amalgam in this way we must use one that will not shrink.

The use of cement under gutta percha has given me greater satisfaction than any other application of this method of filling. To stop a tooth with gutta percha is usually regarded as a very simple operation, but if a really good filling is to be made the material must be placed with much care. The tenderness which occurs under gutta percha fillings tells us they are far from moisture proof. Soft cement placed in the cavity and the gutta percha forced into it will give a filling that absolutely stops the cavity—it will have the non-conducting qualities of the gutta percha and the cavity sealing quality of cement. Personally I have found the mounting of crowns with gutta percha very difficult, and recently have been using a combination of gutta percha and cement for many cases. The gutta percha is placed upon, or in, the crown, as the case may be, and while soft the crown is pressed to place, and after removal of crown and gutta percha the root is smeared with the soft cement and the crown replaced, allowing the cement to cover the root and cement the gutta percha to it. In the use of Ascher's cement it is very desirable to line the cavity with a good inlay cement. The adhesive qualities of the latter seems to keep the Ascher's cement in its place and to make a better adaptation to the cavity walls.

Few gold fillings really stop the cavity. The approximation of two solid substances so as to make a water tight joint is a very difficult thing to accomplish, and the need of some material which could be used as a cementing substance between the gold and the dentine, or as a substance that would exclude the moisture from the cavity, has long been recognized. The method of partly filling large cavities with cement and after it has hardened covering it with gold has been practiced many years. More recently it has been recommended that the gold be introduced into the soft cement that advantage might be taken of its adhesive qualities to facilitate starting the gold filling, and it has also been recommended that all cement should be cleaned away from the margins of the cavity before the gold reaches that point so that gold and tooth may form the joint at the margin. It is curious how men will place an inlay in the mouth with a line of cement exposed to the action of secretions and wear of mastication, and feeling perfectly sure of its durability call the inlay permanent, but if a line of cement is exposed around a gold filling, that filling is only temporary and doomed to fall out in a short time. Now it is a recognized fact that gold can be so inserted in teeth of good structure with healthy surroundings that it will stand the test of years, while in a poor grade of teeth where bacteria and their effects run riot, it is very difficult if not impossible to preserve them with gold alone. Under such conditions we will fill these teeth with cement, feeling sure there would be no decay under the filling, or we would use an inlay with the assurance of the inlay workers that it would preserve the tooth, where a gold filling would last but a short time, showing our reliance upon cement as a tooth saver. I have tried many methods of manipulation in order to get a thin layer of cement under gold fillings, leaving only a very fine line of cement at the margin, but I found it so difficult to accomplish that I had almost abandoned the attempt and for some time have been using A. C. Hewett's amber cavity lining, care being taken to leave the margins clear so that gold would touch tooth at that part. This lining has proved very satisfactory so far.

In the February, 1907, *Cosmos* W. Thompson Madin, D. D. S., of Birmingham, England gives a method of using cement under gold fillings that seems to solve the problem very nicely, and it places the gold filling ahead of the inlay as a tooth saver according to the ideas advanced by the inlay advocates. His method is to prepare the cavity as for a gold filling and cover the walls with cement as for an inlay. Into this he forces thirty (30) gold foil as if for a matrix for an inlay. The filling is then inserted into this matrix in the usual manner. This gives a practical and expeditious method of using cement under gold fillings. I have inserted a number of fillings after this method, trying to make the line of cement around the gold as slight as possible, and I find the originator's claim of invisibility is correct. In my later cases a good reading glass would not show the line at all. The rule given is that the cement will disintegrate or wash out to a depth equal to the width of the line around inlays, and if the rule holds good for fillings there is surely no reason to fear for the durability where the line of cement cannot be seen. The suggestion made by Dr. J. Foster Flagg so many years ago that all fillings that are inserted should have a cement lining, seems today to be one of the wisest of all the wise things he gave us.

NOTE:—Since writing the above paper I have learned that Dr. Cochran, of Burlington, Iowa, has used cement lining under gold fillings for six years in a manner that is very satisfactory to him. A matrix of forty-five gauge pure gold is formed to fit the cavity, and after adjusting the rubber, Ames' slow settling cement is placed in the cavity and the matrix forced to place. Then the gold filling is inserted, using a band matrix if indicated. Dr. Cochran uses Pack's pellets or non-cohesive gold, finishing with heavy foil. I have found that some form of crystal gold works to good advantage in many cases.

METHODS AND PRINCIPLES OF PACKING GOLD.*

BY DR. E. K. WEDELSTAEDT, ST. PAUL, MINN.

A number of times during the last six years I have had the pleasure of demonstrating Methods and Principles of Packing Gold. I do not come to you with anything that is new; quite the contrary, for it is something which is exceedingly old. Why it has not been practiced, why it is not practiced, I do not know. In about every place—except in this middle west—where this demonstration has been given, immediately after the demonstration, I have listened to a long discussion on ancient history; what Townsend did in 1855; what other men did in the sixties; and what other men did in the seventies, etc. I have carefully looked up the dental literature on this subject, and that from the time when the first dental essay was published in our journals, and nowhere have I been able to find anything about this subject until in the 1891 *Cosmos*. It is very true there has more or less been said about methods and principles of packing gold; but nothing is said of scientific methods of packing gold, principles of instrumentation, and proper placing of the gold, etc. The proper packing of the gold, however, was first spoken of by the renowned Black in the *Cosmos* of 1891. I have watched a large number of men pack gold. After having given the demonstration I have heard many men say, "That was the way I was taught." In going to the chair and witnessing them demonstrate what they thought they knew of this subject, I have never found a man who knew anything regarding this subject to which Dr. Black called attention, who said that he knew all about it, until I came here today. One of the gentlemen told me how he packed cohesive gold and that man knew scientific methods. And I have seen a great many men pack gold. In that connection I would like to tell you a little story. Dr. Searl and I were just leaving the room at a certain State Society Meeting, when a man came up to me who wished me to look at a filling. I went with him and looked at the operation. I found between a hundred and two hundred men around the chair. Not until then did I suspect a trap had been laid for me. He said to me, "You are always speaking about the necessity of studying failures of dental operations. I wish you would tell these gentlemen why this filling failed." I took the glass and looked at it. It was one of the most beautiful operations I have ever seen. It was made in the disto-occlusal surface of an upper left first bicuspid. Completely around the filling was the most beautiful black ditch that a person ever saw. I looked at the operation a moment, and I said to the man, "I should judge that the failure of that operation was due to having a matrix placed around the tooth, and then standing in front of the patient and packing the gold against the matrix as it is so frequently written about; so many men speak of it in public discussions of this subject; others advise it; and I am sorry to say, still more follow it." The man looked at me in amazement. He said, "Who told you?" I said, "Nobody told me." "Well, then tell me how long that filling has been in place." "I should say 18 months or two years; something of that kind." The man looked at me a little while. He said, "I want to tell you something. I never had any use for you; I never met you before until this morning." I said, "That is not at all strange. I know a whole lot of people who have no use for me." He said, "I want to shake hands with you." He led me to one side and he said, "Two years ago at this time, Dr. So and So came here and demonstrated the use of the matrix, and he filled the tooth precisely as you say."

---

*Lecture delivered before the Wisconsin Dental Society, July, 1906.

Now, gentlemen, it is a peculiar thing, that a simple diagnosis of that kind could not be made by anybody of ordinary intelligence. It is a very simple thing. Later I went back to this case, and saw how the operator was operating. He also had the matrix around the tooth, and he was also standing here (indicating) and packing his gold against the matrix. I looked at him a moment. He said, "You don't like my line of force. The other man used foil; I am using moss-fibre gold. Wherever moss-fibre gold is used you can never have a black ditch around the filling, no matter what the line of force is which you use." In other words, you go into a hat store and buy a hat for two silver dollars, but your two paper dollars wouldn't buy the hat. There is just about as much reason in one case as there is in the other.

There are two kinds of gold; cohesive gold and non-cohesive gold; consequently there are three methods, the all-cohesive method, the combination method, and a non-cohesive gold method. The non-cohesive gold method is not used much at this time. Cavities in the human teeth are either filled by using all cohesive gold, or using a combination of cohesive and non-cohesive gold, as demonstrated by Dr. Searl and Dr. Wilson at this morning's clinic. By cohesive gold is meant that the gold is annealed just prior to being placed in a given cavity. By non-cohesive gold is meant, that the gold is not annealed prior to being placed in a given cavity. Cohesive gold is also known as annealed or hard gold. Non-cohesive gold is known as unannealed, or it is frequently spoken of, as soft gold.

Let me try to interest you in the all cohesive gold method as used by the great mass of operators and teachers and those we see operating at our public clinics. Can you all see from where I am? Let me say, this is the gingival wall of the cavity and in a proximal surface. It is not unusual to see men take a piece of cohesive gold in that way (indicating) and place it in a position like this (indicating); (this is known as the cohesive gold method); then condensing the gold on the gingival seat, that way (indicating); letting the final condensation come at that point (indicating). You may all see that that fills that portion of the cavity perfectly. There is no opening there at the linguo-gingival angle. Now let me place another piece of cohesive gold. The moment that this is placed in position here, and pressure is placed at this angle, the moment this second piece of gold is condensed, the original piece placed, being an intractable material, will spring from the margin. The more pressure I place on that piece of gold the greater is the movement here at the gingivo-cavo-surface angle (indicating). There is no method which we may use that will again place that gold in its original position against the gingivo-cavo-surface angle. Placing the gold in this way is the cause of so many failures of these fillings; so many leaky margins. The method is unscientific.

The correct way to do that is to make a foundation of cohesive gold against the axial wall and approach the gingivo-cavo-surface angle at an angle of about 45 degrees. In the fewest possible words, let me say this (indicating) is cohesive gold. Let me make a foundation of that kind with it (indicating) in the cavity, not approaching that angle in the least. Here we have a good foundation of cohesive gold, for the next piece of gold to rest upon. Then taking a larger piece of gold we may cover that gingivo-cavo-surface angle, for we have a sufficient body of gold to keep the gold from springing. This does not apply to filling cavities in bicuspids and molars only, but it applies to every cavity where we use cohesive gold, whether it is in the incisors or cuspids does not make any difference. A cavo-surface-angle should always be approached from a foundation of gold, i. e., having a foundation of gold on an axial wall to one side of the cavo-surface-angle. If you wish to approach that wall here (indicating) there should be a sufficient body of gold so that the gold will not spring from that angle while it is being condensed. The same here (indicating) and in every other portion of it.

Now, so far as the stepping of the plugger point and lines of force are concerned, Dr. Black has called our attention to one thing, that if you wish to make a tight margin along this cavo-surface-angle that (indicating) is the proper angle for the plugger point, about 45 degrees; and unless the gold is packed at that angle, we can not make tight margins with cohesive gold at that place. When operating on such cavities the great mass of operators do not attempt to obtain sufficient separation, with the result that when an attempt is made to condense the gold, the direction of force is about at that angle (indicating). Tight margins can not be made against any margin by holding the plugger at that angle. There may be those who feel that they have sufficient ability to do this, but such is not the case. If you will take some glass tubes and grind the inner surfaces, roughen them, and then try different methods of packing gold in these glass tubes—or take a freshly extracted tooth and make a cavity, or several cavities in it—and then test your fillings, you will find that there is just one method of condensing your cohesive gold that will give tight margins. It is not an easy matter. In cavities of this kind (indicating), in bicuspids and molars, I prefer a somewhat different method from the cohesive gold method just demonstrated.

This method applies only to those cavities which we fill in bicuspids and molars. It is not to be used for filling cavities in the surfaces of the incisors or cuspids. I refer to what is known as "the Black method" of using one cylinder of non-cohesive gold; that is, a sheet of No. 4 or No. 6 gold, as the case may be; or a half sheet or a quarter sheet of gold is used. Obtain a pair of small drawing dividers. Place a hole through them and then place a screw through the hole. The cavity is measured with the dividers from the linguo-gingivo-axial angle to the bucco-gingivo axial angle. This gives you the gingivo-linguo-buccal width of the cavity. Take a sheet of gold, or a part of a sheet, as you may wish to use, it depends upon the length of the cavity occluso-gingivally—fold that sheet upon itself until you have a ribbon that is one-fifth wider than the gingival seat. Now, take that ribbon of gold and wind it around the divider points. That will give you a cylinder in that form (indicating). Do not anneal that cylinder. Place one end of that cylinder in position in the cavity in that way (indicating) and as it is a little broader than the cavity, send it down on the gingival wall where it belongs. It should be wider than the gingival wall; stand out beyond the tooth fully one-fifth broader than the gingival wall. In condensing this cylinder do not condense it more than one-half the width of the gingival wall, for if you go beyond one-half this width you will force it from its place. After one-half of the width of the cylinder has beeen condensed begin placing your cohesive gold precisely as if that were the gingival wall of the cavity. As the cohesive gold is built on this non-cohesive cylinder gradually condense the cylinder as you add your cohesive gold. Cohesive gold may now be added until it covers the gingival cavo-surface angle. By following such a method we at once simplify the operation, greatly expedite the same, and the chances for making tight margins are very greatly enhanced. That is a very good method to use and one which I often employ.

The other method is known as the three-cylinder method. A quarter sheet of No. 4 gold is folded into a ribbon and rolled in cylinder form. The cylinder is a trifle broader than this gingival wall. The cylinder is then placed in the linguo-gingivo-axial angle in that way (indicating). If the cavity has been properly prepared the cylinder will stand in that way (indicating). The cylinder should be condensed, as was the other, one-half of its axial width only. A second cylinder of the same size, a quarter of a sheet of No. 4 gold is now placed upon that side (indicating); placed in the bucco-gingivo-axial angle. It also stands out from the tooth, as does that (indicating). Not any farther than that. It also is condensed.

The third one, composed of two grains of gold, or one-half a sheet, is next placed in position, which locks the other two in position; keys them to place. The condensing then is carried on to one-half the axial width of the gingival wall, and the operation is completed with cohesive gold. These cylinders are not annealed. There should, under no circumstances, be a second layer of non-cohesive gold placed after these cylinders are in position unless a layer of cohesive gold is placed completely across the cavity and the condensing completed. Then if the cavity extends gingivally way down here (indicating) a second layer of non-cohesive gold may be placed upon the cohesive gold. By placing those cylinders in that way, that is (indicating), six of them, one on the other, you will find that the non-cohesive gold will slide upon itself and eventually the filling will fail. One layer of cylinders, as a rule, is quite sufficient for all purposes.

Now, in regard to stepping the plugger point. If we are condensing our gold against an axial wall the condensing should be from there (indicating) toward the axial wall. If we wish to make tight margins the plugger point should be stepped across the filling in that way. To make tight margins at the cavo-surface angle the plugger point should be stepped in this way and in this direction. That is the correct angle to use. Never step a plugger any farther than the diameter of the point. You observed that in the operations of Dr. Searl and Dr. Wilson, which were made this morning, and I do not feel called upon to say anything more about stepping the plugger point.

The lines of force which should be used are practically at that angle (indicating) if you are operating here (indicating). If you are operating here on the occlusal surface the line of force is at that angle (indicating), and if along this buccal angle the line of force is there (indicating). The last use of the plugger should be wedging the gold against the cavo surface angle (indicating).

The most difficult operation which we are called upon to make is the removal of serumal calculus. Few men are able to do this and do it successfully. The next most difficult operation is to make tight margins with cohesive gold. A great many men tell me that they can make tight margins with cohesive gold. In fact, a short time ago a man invited me to witness him operate. There was only one man who knew how to fill teeth with gold, and he was that man. I wish I had that man's ability. I wish that I could erect such monuments. Unfortunately I am not a Southwell or a Wendel who can do things of this kind. This man showed me, I think, some thirty-nine operations, and in each case the cusps of the teeth had been removed. Where there was a cavity in the proximal surface he had removed the cusps and restored them with gold. I never saw such beautiful operations in all my life. This man was wedded to a theory, and every operation that he makes is according to this theory. Every operation which I saw had a black ditch completely around its entire margin. His theory is not a very good one, I am afraid. If you wish to know why it had a black ditch around it I will very gladly tell you, although it is somewhat foreign to the subject. In cutting off the cusps of the teeth he did not cut far enough. He permitted his gold to rest upon the enamel. Enamel is not resilient; enamel does not give; and the result was that when the operation was completed and the rubber dam removed the moisture ran between the gold and the enamel. Fillings should be anchored in the dentine. The dentine is resilient, and consequently it gives. The enamel never gives.

The method just demonstrated of using non-cohesive gold is not applicable to similar cavities which we may fill in incisors and cuspids. There are a number of operations coming to me to be corrected where I find that one non-cohesive gold cylinder has been used for the gingival wall. These fillings have been made in cavities which are in the proximal surfaces of the incisor and cuspid teeth. Where we are making such operations we should attempt to obtain all the strength possible and use only cohesive gold.

Men's ideas are sometimes very singular. There are many men who imagine that all there is to filling teeth is cavity preparation. So many men have told me that so long as the cavity was properly prepared it did not make any difference how the material was "thrown in." It makes all the difference in the world. Cavity preparation is like the foundation upon which we erect a building. The filling of a cavity is to be likened unto the bricks and stones in the walls. We may make the most beautiful cavity preparation in the world, and if we do not use some judgment in placing our filling material it is useless to fill that cavity; and after the cavity is filled and filled in the most scientific manner that any man is capable of filling it if there is no attention given to trimming that filling to form we might as well not have made the operation. Cavity preparation is simply one of the essentials, that is all.

A short time ago—and it gives me a great pleasure to say this—it gives me a great deal of pleasure also to be here—this matter of filling cavities in glass tubes came up. Some twenty gentlemen made fillings in glass tubes. Each man made three fillings; one of all cohesive gold, one of combination cohesive and non-cohesive gold and the third an all non-cohesive gold filling, and all were made in glass tubes. Thus there were sixty fillings made by these twenty men. So thoroughly had they been instructed in methods and principles of packing gold that there was not a filling in all those glass tubes that leaked. I do not think that it is possible to find as many men in another organization who could do this; but what I have said is what was done by the men of this one organization.

Mr. President, there is a whole lot of other things to do, and a whole lot of other things to say, and I have said quite sufficient. I thank you for your close attention. I am very glad to be here and very glad to have met you. I have gone over this subject rather hastily but I hope that few corners have been skipped. Of late I have not attended many society meetings, and I shall attend fewer meetings in the time to come. We have many men to the west of us and southwest of us who are all trying to carry out this work. It devolves upon you, if you wish to progress and advance, to also begin carrying out this work. Progress must come from this northwest. It will never come from any other section of the country. The eyes of the whole world are on you men here in the northwest. If you do not see fit to carry on the work of advance then good-bye may be said to the dental profession. It depends on you men here in this northwest to carry on the work. All that I have tried to interest you in is not my work, but the work of my Master.

Before I sit down I would like to say to you that we have a club in St. Paul called the G. V. Black Dental Club. Our clinic is arranged for next February. We would be glad to see you, one and all, at our clinic, and we will give you the best we have.

ON THE PACKING OF GOLD IN THE AVERAGE CAVITY.*

BY CHARLES SOUTHWELL, D. D. S., MILWAUKEE, WIS.

This paper is an intimate forerunner of the work I shall attempt at the clinic tomorrow and is offered to give you acquaintance with the methods and controlling ideas that I have practiced with no appreciable modification for more than twenty-five years.

In order that we may arrive at a quick understanding I feel it my duty to the situation to say frankly and confess freely that I consider the packing of a meritorious gold plug in the average cavity to be a very simple matter.

There is in our calling hardly a commendable service that is or should be more easily accomplished and for fear that I may fail in convincing you of the low estimate in which I hold the packing of gold I will go so far as to say that any compound alloy restoration when well done calls for more manipulative skill than does the proper packing of gold in the average cavity, and to keep the subject within the lines of the title of this paper I will for convenience divide the filling of a tooth with gold into three parts. The preparation of the cavity, the packing of gold and the finishing of the gold. My remarks are to be confined quite exclusively to the middle third—i. e., the packing of gold.

There seems to be too much glamor about the making of a gold stopping. Is it because we employ one of earth's noblest metals? Possibly so. I dare say that if silver or any of the baser and therefore less expensive metals had an acceptable color in addition to cohesive and other amenable constants that this glamour would not be.

And again it may be that instructors have unwittingly raised too much awe about the packing of gold.

This could begin in the dental office when as a student the embryo dentist is graciously permitted to cast an occasional glance in the gold drawer, and after many months, if he be lucky, he is raised to a seventh heaven if permitted to fold and cut the foil.

---

*Read before the Wisconsin State Dental Society, July, 1906.

His subsequent college experience is not calculated to lessen the awe, for gold stoppings are the last that he is permitted to undertake and then only after innumerable lectures, interminable, tedious demonstrations and clinics, of all of which, gentlemen, may, in many instances, serve to mystify, discourage and incumber the young mind. The preceptor and professor are seemingly in unison in their endeavor to convince the young aspirant, even against his will, that gold stoppings are difficult, exceedingly difficult, when as a matter of fact their combined efforts should be to disabuse his mind of any such preconceived notions. It should take the average senior about ten days of steady application to master every intricacy of packing foil in the average cavity. In fact, gentlemen, I will go so far as to state that any promising lad, of say 19 years, should be able to acceptably pack the gold in the average cavity after two weeks' application under the right tutor—using any known method.

In contending that the packing of gold in the average cavity is a simple procedure I am free to admit that it would be expecting quite too much of a preceptor to require that he should take a raw young recruit immediately into his confidence and admit voluntarily the packing of gold to be a very simple matter.

At the opening I expressed a doubt as to my ability to have you understand how lightly I hold the packing of that beautifully amenable metal—gold (whether cohesive or not). And not being overconfident of my success in making myself so understood I will attempt another illustration.

Suppose that in one of the various applied arts or in plain everyday mechanics it was frequently found necessary to hermetically fill holes with gold and that the holes correspond in size and situation to the average cavity in teeth. And that in every laboratory, atelier, workroom or shop, as the case may be, these holes were sufficiently numerous to warrant the steady employment of one or more persons.

Who would this work be done by? Men of ripened experience? I think not. It is my belief that this work would be done exclusively and beautifully by girls and I can easily fancy that the subject of how, when and where would be a tabooed drybone in their social life.

Please do not misunderstand me. I have no intention of belittling our calling or shattering idols, but I do entertain the decided opinion that the subject of packing gold is of and for the schools and that it should have small place at dental gatherings.

Fellow practitioners here is a piece of lead. In it holes may be found that were made with hammer and an old-fashioned square nail. The holes are about one-eighth of an inch in depth and some are made at the edge to compare with the proximal cavities. I will ask how long should it take any one of you gentlemen to teach any bright youngster to creditably fill one of the holes with gold, using any method?

The fact that a cavity is within a tooth and the tooth is within a mouth, surrounded by tissues containing blood with saliva hard by and that the cavity is quite irregular in shape and not always clearly accessible, are merely details, gentlemen, consequent details, I will admit, but inasmuch as these are or may be quite fully met I contend that inasmuch as they are compassed before the gold is undertaken it follows as plainly as the night follows the day that there is or should be, as far as the packing of the gold is concerned, practically little or no difference between cavities in a tooth in the mouth and these holes punched in this piece of lead.

Do I lessen the awe and do I modify the glamour?

If the packing of gold is such a simple matter in what way do I account for the many sad instances of incompetency that are met so frequently.

I will first mention the aforesaid glamour and awe. I will barely mention the easy golds with which many are led to believe a cavity may be quickly stuffed and passing other less consequent contributants I name the chief cause to be inertion as expressed in the method or dentist, or both.

The whole subject of packing gold from Alpha to Omega is merely the question of the application of force. A reasonably perfect filling may be pushed together by hand pressure if sufficient time be given and the patient survives. Or it may be solidly thumped together by an automatic mallet or it may be perfectly whacked together by the hand mallet or it may be condensed by the electric mallet or the Bonwill Mechanical mallet and one filling will be, inconsequent quibbling aside, quite as perfect as the other, providing sufficient time be given.

However, in direct positive proportion to the amount of time required (and time is here meant to include physical strength and therefore patience) is the operator tempted to slight his work. Slow taxing methods invite imperfection.

The force may be all within the operator, as with hand pressure or with the hand mallet when wielded by the operator, or it may be divided unequally between the operator and the method as with the automatic.

It may be wholly within the method as with the hand mallet when wielded by an assistant, but with the electric mallet or the mechanical mallets on an electric engine the force is supplied entirely by the method and is not dependent on an assistant.

I believe that I am fair and logical when I allege that in the degree that the operator supplies the force just in that degree will he supply the imperfection. Not with every filling, gentlemen, nor with every operator, for there are many painstaking operators who are self-sacrificing enough to make perfect stoppings even with the automatic mallet, but in attempting some reasons for the many sad instances of incompetency that we meet with daily I am forced to the conclusion that it is not through inability but through an unfortunate choice of methods.

With the Bonwill electrical mallet or with the Bonwill mechanical mallet operating on an electrically driven dental engine the strongest operator cannot succeed any better than a physical weakling and where, as has been stated, the force is supplied wholly by the method the temptation to slight the condensation is almost entirely eliminated. Therefore, as a general proposition, it naturally follows that the specific gravity of the filling condensed by methods that supply all of the force is apt to be of the highest.

I will now carry the question a step farther and venture the statement that when an operator is choosing a method from among those that supply all of the force he will find that one best which permits the greatest speed.

Why operators continue with methods that produce imperfect fillings in their hand is a stupefying question.

No matter how poor an operator may be he is able to recognize good operations and these he encounters in his daily practice and may witness at clinics.

The makers of clever gold operations are a generous class and the fact that the maker of poor gold stoppings does not lay down his hoe until he places himself on a par with the best by searching out a perfect method bespeaks a decided culpability. Nine out of ten may, with the right method, be taught to be as clever as the very elect.

Considerable fault may be found with dental schools for permitting students to take up with hand mallets and automatic mallets until after they have been taught the perfect employment to those methods that supply all of the force—namely, the electric and mechanical mallets. Should the present order be reversed and the forceless methods be relegated to their proper place it would be found that they would be in very moderate use and only as expedients after the graduate had attained a fixed practice. And I am confident that a remarkable change would be noted in the operations of the coming dentists.

To make the purchase of these expensive instruments obligatory would require courage on the part of the school first electing to make the change, ultimately, however, a step so decided would redound very greatly to the credit of the school.

Very rarely are methods chosen and adopted on their intrinsic merits. With the vast majority the welding of gold is now largely as it was in their beginning.

The student adopts the hand mallet or the automatic because they are the least expensive and in his college work and in the possible shifting during the first few years of his practice the very simplicity of these methods fit his purse and requirements admirably. But the astounding part of it all is the fact that he will continue these methods after he is well settled in a lucrative practice.

Going back to the college days again and speaking of that worthy, desirable, clever instrument the electric mallet, it is usually too expensive for the student purse. Furthermore, his college may not be equipped to favor its perfect adoption and in his unexperienced hands it is liable to become disorderly.

After graduation it does not conveniently fall in with his barnstorming years. He therefore very naturally shies and adopts one of the more simple methods.

These observations are quite as true when as a student he contemplates the purchase of a mechanical mallet. When a mechanical mallet is used on a cable engine its usefulness is distinctly modified and its perfect adoption is only had on a cord engine, the least expensive form of which is the Doriot. Now a Doriot head may not be easily contained within the locker assigned to students and for inconvenience in toting, handling and shipping I know of no engine that is as inconvenient. The student therefore shies again and takes up with the ordinary cable engine which, as has been stated, distinctly modifies the usefulness of any mechanical mallet.

From the foregoing we have a double reason why the more expensive and less tractable methods for the packing of gold were avoided by the student but, as stated, the continuance of slow, taxing, lacking methods, after an operator is in full tide of a regular practice is an astounding matter to the writer.

The question may be seriously raised as to whether we are as progressive in all respects as we would have it appear. The stone and marble cutters for some of their finest work have discarded the hand mallet for the pneumatic tool. Ship calkers have dropped the mawl for the pneumatic calkers. Boiler makers, bridge builders and those constructing steel buildings have ceased with the riveting hammer and use the pneumatic riveter, and yet we retain what is being discarded in everyday mechanics.

I had hoped to avoid any mention of the equipment that I use, but if there are benefits to follow this paper and the clinic tomorrow I am really compelled to appear quite punctilious on the matter of the equipment.

I find upon investigation that the Bonwill mechanic mallets as now manufactured are wholly of the slip joint order whether made for the cord engine or the cable engine.

Twenty years ago those made for the cord engine were very simple in form and permitted the cord to run as far as the cam wheel, as may be seen on the engine head at the right and in these worn out relics.

The other engine head ends with a mallet of the slip joint order, which is attached to the wrist movement of the Doriot arm. Now, if the manufacturer desired to discourage the adoption of the Bonwill mallet on a cord engine (which is certainly not the case) they could not have devised a combination that would kill it quicker. The wrist joint not only adds a quarter of a pound to the weight, but it is a very disingenious, wobbly combination that could not be used with any comfort whatever. This is a point in the consideration of the practical features of the mallet that may seem incongruous in a paper, but it is far too essential to omit.

It is a very easy matter to convert one of the later day mallets to the more perfect form that I have described and illustrated by having a pulley soldered to the side of the cam wheel and a small socket made into which the arm rod may slip, as may be seen on the engine head on the right. This may be done in any well regulated machine shop at a very nominal expense.

And now one more essential deduction of the practical order. With the mallets, that supply all of the force, the greatest speed and the least physical taxation on the operator—namely, the electric or the Bonwill mechanical, mounted as I have endeavored to describe—it is possible for any operator to pack the gold as perfectly as by any other method in the average accessible step cavity in a bicuspid or molar in from twenty to forty minutes. All with no more physical effort on the operator than is expended in the use of a bur.

And a still further practical point which I will lead up to by stating respectfully that in some respects dentists are too dependent on the manufacturers for change in equipment.

After very many years with the foot or standard of the dental engine on the floor and often in the way it occurred to me to attach the engine to the chair. This I found to be a very simple matter and one which led to many delightful surprises, the chief of which was the distinct advantage of having a constant relationship maintained between the patient and the hand piece. Whatever position the patient was made to assume the engine followed and I am free to admit that this has contributed very largely to a still happier use of the mechanical mallet.

I have no hesitancy whatever in recommending this as a very desirable change.

The strictures contained herein do not apply in all directions and it is a matter of small moment to me personally whether any of the ideas I have advanced are adopted or not. I advanced them solely for what they may be worth to those who honor me with their attention and I beg to assure you that I will not contend very strenuously for their maintenance except to say that they are the best thoughts I could hastily gather and I hope I have succeeded in making them kindly and deferential.

That is due to this body of gentlemen.

PRESIDENT'S ADDRESS.*

BY H. C. MERRILL, D. D. S., COLOGNE, GERMANY.

Gentlemen: At our last meeting in Berlin you very kindly saw fit to elect me to be your president for the coming year. My first feelings were that it would be simply impossible for me to accept a position for which I am so little fitted and a position which I cannot fill in any way adequate to the occasion, but owing to the fact that it was made clear to me that every man must try to do his best when called upon to take his share in the society work and being convinced of the generosity of the members in their judgment of my short comings as their chairman, I accepted the honor you so kindly conferred upon me.

The attendance at our meeting in this glorious old city of Rome is a great satisfaction. It would have been larger still had not sudden illness and accident prevented some from coming at the very last hour. You will agree that owing to the distance for most of us this attendance proves clearly the strength, vitality and good fellowship of our society as a body.

This society was founded by men who were living in a foreign country and in its very infancy the great benefits to be derived from the social side of the meetings were kept well in mind. The attendance here in Rome proves again how the social side of our society life has grown from year to year. Now that our society is *strong* let us not forget this principle that gave it birth and let us so discipline ourselves that this phase of our society life be above the influence of personal aims, politics or elements which disturb harmony.

The younger members and those who are about to become members would do well to keep in mind the great importance of attending the meetings. Paying the annual fees and having one's name on the list in the yearly pamphlet does not help a man in any way. The real help comes from association with men of our own calling—in hearing the papers, the discussions and opinions of many different men and men of other and sometimes greater experience. There is no doubt that a man returns home after having attended a good meeting with new courage and determination to do better for his patients and for himself. Not only do we gain a greater knowledge in the science of our profession, our whole moral fiber is made stronger. Some young member may think he cannot afford to take the time to attend our meetings, that he is too busy, that a wise man stays home and attends to his practice, that he can keep himself posted by his reading, and so on, but let me warn him that this is a decided mistake. He can afford to attend the meetings, but he cannot afford to stay at home.

---

*Read before the American Dental Society of Europe, March, 1907.

During the thirty-four years of the life of this society what great changes have taken place in our profession. What stupendous strides have been made toward the real truth and what a different position the dentist has with the general public today. Only a short time ago no less an authority than the celebrated Dr. Osler made the statement that the dentist did more good to a greater number of people than any other specialist of medicine. We know this to be true and every serious, earnest dentist today has a right to be *proud* to belong to a profession which is not only a beautiful science but a great blessing to humanity! The usefulness and the scientific standing of the dentistry of today did not come by jumps and starts, but is the result of long, hard, earnest work by men seeking light where there was but darkness. At our last meeting in Berlin we had the good fortune to have with us one of the greatest dental educators America has ever known. A man who has been indefatigable in his efforts to bring dentistry up to a scientific basis, a man who has spent a lifetime in elevating our profession—Dr. Black.

Our society has been honored by having among its members a man who is known by every educated dentist in the civilized world—a man who by his untiring research, his writings and by his personality has uplifted and dignified our profession—Dr. Miller.

How much we owe to our Dr Jenkins for the long persistent efforts which have for results the artistic porcelain work of today—the fact that he is among us prevents one from saying what I would wish. Whoever had the good fortune to know Jonathan Taft has a reverence for his memory.

To such men—and to many others whom I shall not name—let us never cease to be grateful.

A new departure seems to be slowly gaining ground the last few years—and that is the specializing of different branches of our work. There can hardly be a doubt that the specialist in Orthodontia is obtaining splendid results. The disputes so common as regards to regulation belong to the past. In former years we hoped we were right in our judgment, but now by using the measurements so beautifully arranged for us by Dr. Hawley we know to a certainty what to do and by following the instructions of men in America who have made this branch of our profession their lifework to know how to do it. The same specializing that has been carried out in Orthodontia can be repeated in crown and bridge work, porcelain inlays, gold inlays, etc. In my opinion with a large clientele this can be done greatly to the benefit of the patients. Men who are specially efficient in some one branch of our work can accomplish much more in a given time with less pain and with far better results than a man in general practice who must be Jack of all trades.

I will close my remarks, gentlemen, with the hope which you all share with me that the next thirty-four years of the life of our society be as potent in good results as the last thirty-four years have been.

On the proposition of Dr. Rathbun, seconded by Dr. A. H. Chamberlain, a hearty vote of thanks was accorded to the president for his able and instructive address.

REPORT OF COMMITTEE ON ART AND INVENTION.*

BY FRED W. GETHRO, D. D. S., CHICAGO.

Your committee has endeavored to assemble in this report a synopsis of the material relative to the progress of art and invention that has appeared during the past year. To this end a letter was sent to every dental dealer in the country requesting this information, as well as models of all new appliances. These instruments and appliances have been carefully mounted and are exhibited here for your inspection.

Foremost among the new inventions would come that of Dr. Wm. H. Taggart of Chicago, for casting inlays, partial dentures, etc. While this apparatus is not on the market, your committee has seen Dr. Taggart make gold inlays, partial dentures, etc., that are works of art. A detailed description of this machine has appeared in several of the dental journals, and the apparatus will be seen in a practical demonstration in our clinic Friday.

---

*Read before the Illinois State Dental Society, May, 1907.

We desire to acknowledge our thanks to the S. S. White Dental Manufacturing Company for the mounting and arranging of the various exhibits, and to the following supply houses for their co-operation: The Consolidated Dental Manufacturing Company, Sibley Dental Supply Company, Buffalo Dental Manufacturing Company, Dental Protective Supply Company, J. W. Ivory, H. Fischer & Co., Columbus Dental Manufacturing Company, The Snow Dental Company, J. C. Nolde DentalManufacturing Company, and Brewster Dental Company.

The S. S. White Dental Manufacturing Company presented the following new dental appliances:

Harvard Bone Spatula.

To avoid discoloration of the fillings from the use of steel spatula.

Crenshaw Contour Matrices Nos. 6 and 7.

The Crenshaw Contour Matrices Nos. 6 and 7 are for use in filling cavities between molars and bicuspids—No. 6 for molars, No. 7 for bicuspids. Each matrix is provided with three sets of bands and three extra tubes. This equipment will enable the operator to exactly fit the matrix to any approximal cavity.

Cuspidor Bracket No. 5.

This bracket is attached to the rod supporting the seat of the S. S. White portable chair, thereby providing the convenience of a cuspidor.

Round-End Fine-Cut Fissure Burs.

Made in four sizes. For preparing cavities for inlays. These burs are provided with long multiple blades, permitting rapid cutting of sharp angles at the base of the cavity.

Schamberg Surgical Burs.

Two spear-pointed burs for minor surgical operations. Used in treatment of diseases of the antrum or in cases of pyorrhea alveolaris.

Soft Rubber Wheels and Cones.

A set of three wheels and two cones for use in the lathe for finishing vulcanite and metal dentures.

Brigham's Burnishers.

Made in nine different shapes. In cone-socket points (only).

These blued instruments permit burnishing of gold and are particularly adapted for filling cavities having frail walls.

S. S. W. Card Index System, No. 2.

A card system using the Allan diagram.

Furnace, Tongs "M."

The bend in the handles of these tongs permits the removal of trays from the electric furnace without the operator's hands being exposed to the heat.

Plastic Filling Instrument No. 5.

A right and left packer and trimmer. The compound curve of the blades makes it particularly useful for filling difficult distal cavities in bicuspids and molars, and in shaping the filling after it is in place.

Warm Air Chip Syringe No. 38.

For producing a fine stream of hot sterilized air for drying or disinfecting a cavity.

Bristle Brush Wheel No. 0.

Made of the stiffest black India bristles. Preferable to wire brush wheel.

S. S. W. Clasp-Bending Pliers No. 134.

The oval shape of the beaks and improved form of the handle are the special features of these clasp-bending pliers.

Mixing Tablet No. 6.

A slab of plate-glass, 6x3x1 inches thick, and of sufficient weight to remain steady while cement is spatulated.

Spiral Saws.

Five inches long. For use in mechanical saw frame. Will cut in any direction. Useful in cutting sections of vulcanite to facilitate repairs and wherever a rapid-cutting saw-blade is indicated.

Soldering Frame for Gas Burner Spider No. 3.

A circular frame with a metal rim, 4 inches in diameter, which will stand considerable heat.

Waxed Floss Silk in Metal Holders.

This floss silk holder consists of a small metal box, nickel plated inside and out, containing a 12-yard spool of our waxed floss silk. The end of the thread is passed through the opening in the holder and held securely by a cutter.

Electric Dental Sterilizer No. 1.

A nickel-plated oblong sterilizer, inside dimensions 9x4½x3 inches, capacity 2 quarts; fitted with tray for pluggers, excavators, forceps and other long instruments, and a small silver-plated basket for burs, plugger points, etc. Will bring one quart of water to boil in fifteen minutes. Equipped to give three temperatures—high, medium and low—by changing the terminal attachments.

Pope's Sterilized Paper Cloth Rolls in Nickel-Plated Holder and Cutter.

The holder is a hollow steel cylinder, nickel-plated, supplied with a cutter and drop-bar, containing sterilized paper cloth in continuous rolls. The operator can tear off instantly exactly the length of sterilized paper required.

S. S. W. Swaging Outfit.

Consists of cylinder, plunger, cup and base, for swaging porcelain or gold inlays, cusps, crowns and backings. The swaging outfit is fitted with cups to permit two cases to be poured at one time. The cups are made of steel, with a cone-shaped cavity perforating the base, so that when inverted over the impression a die can be formed by pouring inlay metal through the perforation directly upon it.

Wax Spatula No. 35.

This spatula is an improvement on our No. 5 pattern. The metal part is continuous, extending through an ebony handle, preventing injury to the hand when the instrument is heated. The ends of the spatula differ somewhat in curve from our No. 5.

Angle's Ribber Expansion Arch, Small Size.

A small size of the Angle's Arch "E" ribber or plain. These will be found specially useful in regulating children's teeth.

Black's Instrument for Measuring Mercury.

The weighing of mercury has always been a slow and tedious process, and to overcome that trouble this instrument was devised by Dr. G. V. Black. It is designed to measure bulk to obtain a definite weight of mercury. It consists of a cup into which a plunger is accurately fitted. The cup is dipped into the mercury and filled, and the excess is expressed when the plunger is closed. This plunger is adjustable and can be regulated to any weight necessary. After setting the plunger to the desired place a jam nut holds it firmly. Your committee believes that every dentist should know accurately the amount of mercury he is using in mixing amalgam fillings, and on account of the convenience of this instrument we do not hesitate to recommend it.

Black's Spoon for Handling Mercury.

This instrument was especially designed for handling small particles of mercury and is very useful to any one who is weighing mercury. It is made in the form of a pair of pliers and the ends form a spoon split through the center.

THE CONSOLIDATED DENTAL MANUFACTURING COMPANY.

Slip Joint.

A new slip joint for the dental engine.

Ajax Die Plate.

This die plate has a variety of 120 molds of cusps for molars and bicuspids. One-half of the plate is for rights and the other half lefts. The molds are arranged according to size, starting with the smallest and progressing to the largest.

Gold Inlay Matrix.

A special gold to be used for inlay matrix, the thickness of which is .002.

Davis Split Pin.

The part of the pin that is placed in the root is split through the center. This enables one to take advantage of the two canals generally found in the upper first bicuspid, thereby gaining much better anchorage for the crown.

THE DENTAL PROTECTIVE SUPPLY COMPANY.

New Process Nuvo Teeth.

The most important feature of these teeeth is the white backing, which is an opaque material and is incorporated with the tooth when it is baked. The makers claim that this backing has a crushing stress of eight hundred pounds, and that with a straight direct pull on the pins the tooth will stand a stress of seventy pounds, which is about twice the strength of ordinary teeeth. The cost is about one-third as much as platinum pin teeth. A full denture is exhibited with several of the teeth ground away, including one-half of the pins, showing the attachment of the pins and porcelain.

J. W. IVORY.

Ivory's Adjustable Separator.

Consists of a set of jaws somewhat similar to the Perry. The jaws are adjustable and can be varied as to size, each being operated by a small screw. This separator does not impinge on the gum tissue and is an improvement over the old Ivory separator.

Crate Articulator.

The only difference between this and the ordinary occluding frame is that it has two guide ridges and grooves that run full length between the two plates. By this method the upper forward plate may be moved forward and backward without danger of losing the bite.

Anterior Matrix Bands and Holder.

An instrument designed to hold a matrix for filling proximal cavities in anterior teeth. Consists of a thin steel matrix held in place by an instrument which has three jaws, one of which rests on the lingual surface of the tooth and the other two on the labial surfaces of the adjacent teeth, holding the matrix firmly in place.

SIBLEY DENTAL SUPPLY COMPANY.

Dr. J. W. Brady's Chart.

This chart shows both deciduous and permanent teeth in all stages of development, as well as the absorption of the deciduous roots. It is most useful, and this or some similar chart should be in the office of every dentist, so that it may be referred to frequently.

Thym-a-Tol Soldering Flux.

A new flux paste which eliminates pit holes and prevents the solder from balling up.

COLUMBUS DENTAL MANUFACTURING COMPANY.

Crown and Bridge Repair Outfit.

By this method of repairing a Steel's interchangeable facing is used in replacing the ordinary facing. Repair is made by grinding one of these facings to fit. The gold is then covered with a thin layer of wax and the facing pressed into the wax and then removed. The slot in the facing will have left its outline in the wax and indicates the correct location for placing two screw posts. The outfit consists of a drill, a tap, a small screw driver, and these small screw posts.

BUFFALO DENTAL MANUFACTURING COMPANY.

Glass Tray.

A small glass tray with a metal cover, to be used on the bracket table. Can be used for pumice, porcelain work and various other purposes.

Miniature Spatulas.

These small spatulas are designed to be used in a broach holder and are for carrying small amounts of cement, medicine, etc. They are cheap and are sold in quantities, with the idea of using a new one each time instead of cleaning after use.

Celluloid Matrix Strips.

These thin celluloid strips are used for matrices, especially in the anterior teeth for cement fillings.

Flask Press.

This one is made sufficiently deep to take the largest and deepest flask. It is fitted with flask lifter and bolt sustaining ring.

BREWSTER DENTAL COMPANY.

Hoskins' Electric Furnace.

The material used in the construction of this furnace is a substitute for platina, the manufacturer claiming that this substitute has an electrical resistance six times greater than platina. It has no rheostat and may be used on either the direct or alternating current, 110 volts. The muffles are never repaired, as a new muffle complete costs only $3.50.

SNOW DENTAL MANUFACTURING COMPANY.

The Snow Articulator.

This occluding frame resembles the Gritman, the principal difference being that the guides, which receive the joint pins and render possible the imitation of the mandible, are separate from the upper section.

A device known as the "bite gauge" will enable one to ascertain the amount of inclination of the movement of the condyle, and this is transferred to the occluding frame.

Dr. Fay's Refrigerant.

This instrument is intended to take the place of cold or hot applications in aborting abscesses. It consists of a bulb made of thin metal, with inlet and outlet tubes, connection being made by means of a rubber tubing to a cold or hot water supply, and a vessel for receiving the outflowing water. The metal bulb is placed in contact with the affected part and the circulation of the water is established by means of the siphon.

H. FISCHER & CO.

Nonpareil Rubber Tooth Cleanser.

A mandrel made with a ball shaped end, over which a thick rubber cup is placed. It is used for cleaning and polishing the teeth and will not lacerate the gums.

DR. C. A. SKALSTAD.

Rotary Brooch Holder.

An instrument designed to permit broaches to be rotated in the root canals of posterior teeth when held at about a right angle with the holder. This rotating is accomplished by the shaft of the holder running through a sleeve, and on the end of this shaft is a bevel gear which meshes with a similar gear in which the broach is held. This instrument permits of two angles, one a little less than a right angle and one a little more.

Dr. Sprake's Cotton Roll Holder.

For holding cotton rolls on the lower jaw in setting crowns or short dental operations. In addition to the metal extensions which hold the check and tongue away from the cotton, it has two sharp pointed wires that pass through the cotton roll, thereby holding the cotton firmly in place.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, QUINCY, MAY 14-17, 1907.

DISCUSSION OF DR. GALLIE'S PAPER, "GOLD FILLINGS VERSUS INLAYS."

Dr. G. Walter Dittmar, Chicago.

Mr. President and Members of the Illinois State Dental Society: I wish to emphasize and elaborate on a few points made by the essayist in which I heartily agree. He said "the dentist of today must be scientific, an artist and an artisan. He must know the Pathology, Chemistry, Bacteriology and Histology of Dentistry." To this I would add Physiology, and, what is still more important, Dental Anatomy, Normal and Mal-occlusion and a study of the four basal temperaments and their modifications.

Without a knowledge of all of these subjects, but especially Dental Anatomy, Occlusion and the Temperaments, no one can say in any sense an up to date dentist, whose judgment would be worth an iota in the deciding of fillings versus inlays, inlays versus crowns, crowns of one kind versus crowns of another, bridges versus plates or any other versus.

The essayist said use horse sense; yes, by all means; horse sense and scientific knowledge coupled with the skill to perform will make a dentist. Linked in with this is a plea for the broad-minded man, not the man that is so little as to think that there is only one material that should be used for stopping cavities in teeth or only one kind of crown—be it gold or be it porcelain—that should be used for crowning teeth—but the man who has judgment, who is observing, who will carefully consider the conditions that present themselves and then apply the proper remedy. All cavities would not be filled by such a man with gold foil, or porcelain inlays or gold inlays or any other one or two combinations, but he would study the cases in every detail and place into cavities what in his judgment is indicated—be it gutta percha, cement, tin, copper amalgam, silver amalgam, foil or crystal gold, gold-and-tin, gold-and-platinum, high or low fusing or moldable porcelain, or hollow or solid gold inlays.

The plea is—do not be narrow—do not do things the easiest or the quickest way unless it is the best—do not take up fads and ride hobbies, but be conservative, careful, conscientious; do what your better judgment dictates, and give your best service.

Gold foil is without doubt the old reliable, true and tried tooth saver, and I firmly believe the time will never come when it will be discarded entirely as a tooth filling material.

It is true that gold foil has often failed. It is also true that it has often been abused because of the lack of judgment and skill on the part of the operator. It has been placed in cavities that were not properly formed, where oral conditions were such that the filling was placed in the most hazardous environments, because of ill health and lack of prophylactic care on the part of the patient, and no work, however perfect, would withstand the ravages of dental caries.

Such failures should not be registered against gold foil, but against the operators' judgment and skill and against the lack of hygienic care on the part of the patient.

The charge by some that a cavitty can not be sealed so as to exclude moisture with a gold foil filling is to my mind too absurd for consideration; conclusive evidence is constantly presented that gold foil fillings are excluding moisture and are doing it year after year.

But the question comes—what about the bluish discolored enamel around many gold fillings and the recurrence of caries?

My answer again is—it is caused not by the lack of virtue in gold foil but by the operator's poor judgment in deciding to use gold as a filling material for that particular case, or if gold is indicated, by lack of skill in the proper preparation of the cavity in not carrying the marginal outline into a self cleansing and immune area, in not getting resistance form, so that the pulpal and gingival walls of the cavity will be at right angles to the force of occlusion, not making the proper retention form, ignoring convenience form in not cutting points and angles and extending the walls so as to have convenient access to every part of the cavity and finally not preparing the enamel walls, cutting and shaving the enamel until every indication of white, chalky or discolored spots are removed, working it down to a solid, smooth, glassy appearance and beveling the cavo-surface angle from 8 to 12 centigrades. Ignoring all or any of those underlying principles in cavity preparation is the cause of many of the failures which are charged to gold foil. Following a close second in importance is the improper placing and condensing of gold and the misapplication of force. Foil gold and not the crystal form should be used especially for covering the enamel walls and margins. The crystal forms are convenient for starting a filling and possibly fill faster than foil and may be safely used in the body of the filling but over the enamel walls and margins, the old reliable foil is always best, being less brittle—more tenacious—and over the gingival wall, if it is possible, always use a mat of non-cohesive foil.

If this gold is properly condensed with properly shaped plugger points, using instead of hand pressure mallet force in its condensation (and in this I will differ slightly with the essayist, in that I always further condense the gold with mallet force after using hand pressure in placing it, using sharp, finely serrated, convex faced pluggers of the Royce pattern), then using extreme care not to bruise the enamel walls, and applying force to the proper direction. Gold foil fillings can be made that will hermetically seal the cavity, and if they are properly finished and polished there is to my mind no better filling for a certain class of cavities. Now while I have made this plea for the gold foil filling (I would include platinum-and-gold when indicated), I do not wish it understood that I am a radical gold foilist. Porcelain inlays have their field and they also have their limitations. I practically agree in every detail with the essayist's views as regards the positions for porcelain inlays.

I said a moment ago that I believed no better filling could be made than with gold foil for a certain class of cavities, but these cavities must be convenient of access and so located and prepared that gold foil can be thoroughly condensed into every part of the cavity and over the margins; they must be so located that force can be properly applied.

Consequently I would differ with the essayist and subdivide his classification for gold fillings once more—that is, the ordinary proximo-occlusal cavities in bicuspids and molars. In the ordinary mesio-occlusal cavity I should, as the essayist says, place a gold foil filling. But in the disto-occlusal of the molars and often in the bicuspids, and even in the disto-lingual cavity in the cuspid that was mentioned in the essay, I should in all probability place a gold inlay.

The gold inlay, like gold foil and porcelain, has come to stay. In its place it has its advantages. It is indicated for large restoration in molars and bicuspids, in any medium sized to large cavity, when gold is indicated, and for reasons such as position of cavity or impossibility of keeping the cavity dry, gold foil can not be used, in large cavities in the permanent teeth of children; in teeth that are somewhat loose, due to alveolar pyorrhea or other pathological peridental condition, in cases where we find extreme abrasion, especially on the molars and bicuspids, and occasionally even the anterior teeth. Gold inlays are also indicated in the incisors and cuspids where for good reasons porcelain will not stand and a large gold foil restoration is contra indicated.

Some of the advantages claimed for gold inlays are as follows:

1. More certain of restoring the proper contour and contact point.
2. More perfect reproduction of the fossae, grooves and cusps.
3. Less thermal conductivity, caused by the cement which also seals the cavity.
4. The adhesiveness of the cement which supports frail walls.
5. No bruised enamel walls, due to hard malleting.
6. Saves the patient and makes easier work for the dentist.

I can not pass the subject without paying tribute to the greatest achievement in modern dentistry—the perfection of the process of casting gold inlays (though the process is by no means limited to inlays alone) by our master mechanic and scientist, Dr. W. H. Taggart. The process is so simple, the technique so easy to acquire and the results so beautiful and so perfect that one can not help getting enthusiastic over its possibilities.

Dr. Roach's moldable porcelain also has an indisputable field in operative dentistry, being especially indicated for restoring badly broken down molars.

The question of cement I will not go into. Dr. Poundstone and Dr. Ames gave us some startling facts two years ago at our Moline meeting, and Dr. Gallie further gave us the results of some every-day practical tests, all of which demonstrates that for inlays to be a perfect success we must have a perfect cement.

Dr. J. K. Conroy, of Belleville:

This is the third meeting I have attended of the Illinois State Dental Society, the first being at Moline. The clinics given at that time seemed to demonstrate to me that gold foil and everything else, with the exception of porcelain, has been banished from the dental world. The meeting at Springfield last year was a decided difference, in that the porcelain clinic dwindled down, I should judge, to about one-third, and judging from a copy of the program I have at home of last year and the program today, it is still being cut down. But the old gold foil still stays with us.

Yesterday morning a patient came into my office, seventy-two years of age, with every tooth in his head. He has eight gold fillings, which were put in by Dr. J. J. R. Patrick thirty-seven years ago. This man, fortunately for himself, has been in the class of immunes during all this time.

I am not in a position to condemn all inlay work, but there is one class of it that has been abused, and that is porcelain. I saw a demonstration by Dr. Wedelstaedt of a porcelain inlay, very carefully baked, and about fifteen pounds pressure placed on it as it sank into the putty. The filling was taken out, examined under the microscope, and every edge around it was fractured. That led me to question the use of putting in a porcelain filling where there is any stress of mastication. Those who condemn gold foil are doing so for two reasons, either laziness or ignorance. It is one or the other. In putting in gold fillings I have seen a great many operators pound away with the plugger, without any regard for the direction in which force should be used.

In regard to the dissolving of cement, I live in a community where the late Dr. J. J. R. Patrick practiced the greater part of his life, and I see a great many patients who were formerly treated by him. We all know that cement in some mouths will not dissolve, while in others it will not last six months. A mouth that will hold a cement filling for any length of time will hold an inlay, be it gold or porcelain. Where there is no stress of mastication, and where the cavity walls are properly prepared, so that the inlay fits the cavity, porcelain is indicated, but do not depend upon porcelain to withstand stress of mastication. Under these conditions it will hold it as long as a gold inlay. Two years ago I replaced a cement filling that was put in by Dr. Patrick, and he has been dead about twelve years.

As to the use of cement in setting inlays, I heartily agree with the essayist, and with those who have made demonstrations or have investigated the condition of the cement after it is mixed, be it of a thick or creamy consistence. I have set inlays with cement and after setting them have been compelled to grind them, it being evident that the filling did not go down all the way. I am very partial to gold inlays for the permanent teeth of children, such as molars and bicuspids.

The matter of cavity preparation was brought up in the discussion by Dr. Dittmar, and referred to considerably by Dr. Gallie, so that it is hardly necessary for me to discuss that phase of the subject. However, I wish to remark that I was hauled over the coals in a very unscientific manner last week for demonstrating the very method that has been advocated by the essayist today, and reading a paper on a similar subject before the Alumni Association of the college of which I am a graduate, viz., the St. Louis Dental College. I wish a great many St. Louisans could have heard this paper.

Dr. Charles P. Pruyn, of Chicago:

I suppose the reason I was called upon to take part in this discussion was because they consider me one of the old guard in the use of gold foil, and perhaps if I enter a word of protest against the indiscriminate use of inlays it may not be amiss.

I am working along somewhat carefully with regard to the subject of inlays, and I am not fully convinced that the inlay has come to stay. I am using inlays some, but always with a certain amount of mental reservation. If Dr. J. J. R. Patrick had put a gold inlay in a tooth thirty-seven years ago, I very much doubt whether it would be there today.

While this subject is one of gold versus inlays, I want to mention a fact, that in many instances of extreme decay of molars and bicuspids, gold foil will preserve such teeth when it is placed in apposition to amalgam on the distal surfaces, much better than gold will alone. When I see some of these fillings returning that were put in twenty-five and thirty years ago, standing up well today, I am convinced that there is a field for that combination of gold and amalgam in the preservation of teeth. Whether we will find anything else that will take its place I do not know, but at the present time I pin my faith, from the experience I have had, to the use of this material, always having the two metals in complete apposition on the distal surfaces of molars and bicuspids. I am not sure yet of the true explanation, but my theory is that by putting the two metals together we have a short circuiting of electrical current which almost always results in a beautiful oxidation of the baser metal and clean surface of gold, and as a result of this short circuiting there is an electrical impulse, so to speak, which is inimical to the growth of bacteria. That has been proven so conclusively that we can state it as a fact.

The inlay is a beautiful piece of work, when properly constructed, and there seems to be a field for the gold inlay in many instances. The porcelain inlay, on the other hand, is so fascinating that we like to put it in. It works so nicely in many instances, and it makes such a beautiful color, and is not obtrusive to the eyes, that we are trying to make ourselves think it is the thing to use. It is all right from an esthetic point of view. Let us try it still more, but until we get a cement which is insoluble in the fluids of the mouth we will have trouble with inlays right along, and whether we will ever get such a cement is problematical. Where are we on the cement question? I think we are all at sea, and until we get a cement that is reliable the question of inlays is going to be one of uncertainty.

Dr. E. H. Allen, of Freeport:

I am very glad to have heard Dr. Gallie's paper. I agree with him in every particular, but I am reminded that twenty-five years ago the war between gold and amalgam was on the wane. Gold has come out on top, although amalgam is still with us.

Now, the controversy is between gold and the inlay, and we are learning the limitations of the inlay. The inlay has had its effect, in that it has made us better dentists. I believe that we are doing better gold operations, because of the stimulation of the contrast between inlays and the gold fillings. I do not wish to be understood as opposed to the porcelain inlay, for where it is indicated, as in the anterior teeth, where considerable exposure of the filling is unavoidable, and no undue stress may be had, the porcelain inlay has a place which cannot be controverted. It admits of an artistic restoration and of a reasonable degree of permanence, if the inlay is so made that it fits the cavity. I believe from the bottom of my heart that in most of the cavities in the anterior teeth, where no undue exposure of gold is necessary, gold filling will outlast those of any other material that has ever been known since the commencement of dentistry, and the dentists of tomorrow are going to say the same thing. But there is a place for gold inlays. I want to speak of one particular kind. Let us suppose we have a large cavity in a bicuspid, and it takes in both the proximal and the occlusal surfaces and the cavities are joined together; the pulp may be exposed or not; it does not make any difference, but there you are up to nearly the border line of the crown; there is a place for the gold inlay. I am still filling bicuspid and molar proximal cavities with gold foil, and where they are accessible gold foil is the thing, provided it does not take three or four hours to do the work. I believe that is common-sense. If, every time we are going to use gold for filling a cavity, we make a gold inlay out of it, it is nonsense, and it is not good practice.

Dr. J. N. Crouse, of Chicago:

I want to emphasize the places where gold foil is not indicated. In those cases in which the teeth are loose in their sockets and where the force of packing gold will disturb the peridental membrane, I would use cement or inlays.

The next class of cases would be those where we have a great tendency toward decay, where under almost any kind of filling decay will recur. We have all had such cases now and then where we did not expect gold fillings to last for any length of time. In those cases I would substitute some plastic material for gold.

With reference to large gold fillings, I want to tell you that the men who have made the dental profession famous in this country are the ones who have filled teeth with gold, and have filled them well. The fact that such men did that kind of work skillfully makes us think that they were thorough in other things. Here comes in the evil of inlay work; it is so easy to supply any deficiency with cement. There is a tendency to demoralize the thoroughness of the dental profession, which is really the backbone of success. The inlay question has taken such an extreme that one could not for a year or two get up much of a meeting unless there was a big clinic of inlay work. This has been demoralizing to other methods of filling teeth, and it has had a bad effect. Inlays have their place, but they should be put in with discrimination and care.

Dr. William T. Reeves, of Chicago:

I suppose, Mr. President, you called on me because you expect that I am entirely on the inlay side of this question. So I am, by reason of my experience. What I shall say will be based entirely upon the results of my practice, and what theories I have advanced from practice will, I believe, become scientific facts as time goes on.

The essayist and all those who have taken part in the discussion seem to agree in leaning to the side of gold foil fillings, but they have cited some desperate cases in which the inlay was indicated. Now, gentlemen, if the inlay will do for desperate cases, better than anything else, why will it not do equally as well or better for the simpler and easier cases? The inlay is doing for the restoration of teeth what no foil filling, no amalgam filling, no cement filling will do. It is saving teeth. It is avoiding a resort to crowning. The principle is correct. It is no discredit to the principle of inlay filling that an operator here and there goes into the work without a knowledge sufficient to take up the work, and tackles a class of cases that he has no business to begin with. When this is done, failures are almost sure to follow. There is hardly a dentist who, if he will begin with simple cavities, that he is reasonably sure to be successful with, will not only make a success of that filling, but his success will stimulate him to greater effort, and he soon will be putting inlays in a class of cavities that he did not dream of tackling in the beginning.

With regard to the cement question, I will say that inlays are staying better, on the average, than any other class of material we have ever filled teeth with. Take any operator, who has entered the field of inlay work, and you will find that he has entered it conservatively, yet as he obtains great skill he broadens the field of work by filling cavities with inlays that he would not have done at the outset, and I desire to say here what I said in my first paper on the subject, based on practical results, the limitations of porcelain are only the limitations of the operator.

Dr. E. M. S. Fernandez, of Chicago:

Reference has been made to the crushing of porcelain under certain pressure. A gold filling will move out of shape much sooner than a gold inlay will under the same pressure. Why? Because a gold inlay is an alloy which is much harder. But that does not cut any figure. Gold inlay work is certainly science; it is difficult and should be studied carefully. We have, first, to study the preparation of the patient; second, the preparation of the cavity; third, the instruments, and then the manufacture of the inlay, finishing up before cementing, and finishing after cementing. All these points should be considered carefully. It is difficult work. The manufacture of the gold inlay has been so much improved that the cement used has not kept pace with it. We must have a cement that is suitable and reliable for that purpose. I do not use solid gold inlays in my practice, because a solid gold inlay, in my estimation, destroys the only means I have of getting strength from the cement, and under pressure I get a better adaptation between the margins of the cavity and the margin of the inlay.

In regard to porcelain, I do not think the porcelain inlay is as far advanced as the gold inlay. However, we can make use of it. It looks well in the mouth. We can make a very easy operation of it now, and we can save the patient time and cause less trouble and pain; but so far as the permanent use of inlays is concerned, we have not yet reached that stage.

Dr. F. E. Roach, of Chicago:

The title of the paper is misleading. I do not believe there is any fight between gold foil and the inlay. I think the ultra conservatists even admit that, and I object to the title on that ground. The paper is simply a plea for conservatism, or for eclecticism or sound practice.

Dr. J. E. Hinkins, of Chicago:

All who have been practicing dentistry for a number of years will have more gold monuments to their credit than they will from inlays. Nevertheless, I believe that there is a place for the inlay if we had the right kind of material to set it with.

From a careful review of the work that has been done regarding cements by such men as Dr. Poundstone, of Chicago, and Dr. Head, of Philadelphia, it appears we are exceedingly lame on the question of cementation with any kind of inlay we may put in the mouth.

If I remember correctly, by taking the average cements for inlays we can only reduce the cement to one-seventh-hundredth of an inch. There are granules in the cement, so we cannot get below that. Those of you who have studied cements and their manipulation know the tendency of that substance is not to flatten out. Its molecules take an oval form (indicating), and if you get it thinner than one-seven-hundredth of an inch you flatten it out, and you have air spaces, shown on the sides, as pointed out by Dr. Poundstone. You have porous cementation. Literature on this subject can be found in the Transactions of the Chemical Society of Berlin, by Profs. Fischer and Beneckner, published a few years ago. It has been shown by a number of experiments that there are certain physical as well as chemical relations which take place between the arsenic solution and the phosphoric anhydrids. Before that time I thought I knew something about chemistry and had tried to do chemical work along these lines. I had analyzed a number of cements; I knew the chemical composition of most of them. I made a number of mixtures and tried to ascertain the exact chemical combination of the powder of oxide of zinc and phosphoric acid mixed together, but I was not able to do so; neither were other men able to do so. It is almost impossible to get the right proportions of the phosphoric acid or of the oxide of zinc. If, in setting the inlay, you get too much phosphoric acid or too much oxide of zinc, you make the cement porous, and it is soluble to that extent.

Dr. L. B. Torrence, of Chester:

Every man who has prepared cavities for inlays will recognize the fact that it has made us better workmen in preparing cavities for other fillings. Why? Because in the insertion of a porcelain inlay we have got to consider the stress of mastication, and that has made many of us much better gold fillers than we were before the introduction of the inlay into dentistry. That has been productive of more good in dentistry than the inlay itself.

Dr. Gallie (closing the discussion):

Doctor Dittmar referred to the condensation of gold by hand pressure. In speaking of this, I did not mean to convey the idea that we should depend upon the full condensation of gold by this pressure. I believe that the condensation should be done with a steel mallet.

In talking with Doctor Cormany about children's teeth, he said that he would not hesitate to use gold inlays in the bicuspids and molars of children. It is a sad condition when an inlay is needed for the bicuspid or molar of a child, and I cannot believe that many parents are so neglectful of the teeth of their children that their bicuspids or molars require inlays.

One gentleman, in speaking of cement, dodged the question a bit. Oftentimes the cement we are depending on does not harden under twenty-four hours. I remember talking to one of the best inlay workers we have in our building about the mixing of cements, the very best cement, a man who takes every precaution in his work. I asked him how long it took the cement to harden, and he said it might take days. What is the sense of talking about its dissolving out only half of the depth of its diameter when, in the first place, it does not get a chance to set?

I believe that the pendulum is now swinging back, and hereafter not so many will indulge in temporary dentistry, but practice most perfect and permanent dentistry, which can be accomplished by the use of foil gold and pluggers.

PROCEEDINGS OF SOCIETIES.

WISCONSIN STATE DENTAL SOCIETY.

DISCUSSION OF DR. WEDELSTAEDT'S LECTURE ON "METHODS AND PRINCIPLES OF PACKING GOLD."

Dr. A. G. Feé (Superior):

There is one important point that Dr. Wedelstaedt omitted in packing gold, and that is, packing always toward the margin; the center of the filling toward the margin, with cohesive gold. In that way I think it overcomes, to a great degree, the black ditches.

Dr. W. C. Wendel, Milwaukee:

I must thank Dr. Wedelstaedt, for he has plainly demonstrated a great many fine points in packing gold; but I notice one of the men that was demonstrating his work here today was packing, practically, against one wall and ignoring the others. Dr. Wedelstaedt stepped up to the gentleman, and I noticed he changed the angle of his instrument absolutely.

In regard to contouring, and extension for prevention, long before 1891 the University of Pennsylvania taught that system. Marshall H. Webb was the first "extension for prevention" man I know of, and the university graduates followed that system long before Dr. Black ever introduced it. I think you will find many Milwaukee graduates of the University of Pennsylvania who are great contouring men today, and who have contoured continuously from that time.

In regard to packing gold, and packing it readily, you will see an interesting demonstration here tomorrow, if you will witness Dr. Southwell malleting gold foil. If those who are here will watch him closely they will gather some ideas in regard to packing gold, and also coutour work.

I will not say anything about the preparation of cavities. That is all on the same line; that is, the extension for prevention.

I would digress from Dr. Wedelstaedt's demonstration here, in a great many cases, because it is very easy to place a model on the stand there and demonstrate from a perfectly formed tooth, the buccal and lingual cusps being uniform. You do not take into consideration the conditions when you have a very long buccal cusp and a low lingual cusp, or a twisted tooth, or a wide tooth bucco-lingually.

Dr. B. G. Maercklein:

In corroboration of the statement made by Dr. Wendel in connection with the work of coutouring teeth, as advocated by Dr. Webb, I may refer to a fact that antedates 1891 by six years. I gave a clinic before the American Dental Association, in Dr. Wedelstaedt's neighborhood, in the city of Minneapolis, in 1885; it was a clinic to demonstrate the applicability and use of cohesive gold exclusively on the posterior surface of a bicuspid. I had the pleasure of seeing that tooth a few years ago. The margins of that filling, the outline and the general work, is about as near on the line of the work as advocated today as anything could possibly be. Now, that was a public clinic given in Minneapolis in 1885. I received my instruction practically by watchng the work of Dr. Webb hmself in 1875, when he gave several clinics before this Society at Milwaukee, at the Newhall House. He advocated that system, and read a paper before this Society on that subject. I think there are men in this Society who owe almost all they know that is worth knowing to Dr. Webb. It can be further corroborated by the work published by S. S. White shortly after that. I do not know what year. It is not now in circulation.

I would like to make one remark in connection with the demonstration or explanations of Dr. Wedelstaedt in regard to the position of the instruments to pack gold solidly against the wall. I go one step farther than he does when he says the packing instrument should be at an angle of forty-five degrees. It should always be as nearly at right angles as possible to get a surface with the longitudinal axis of the impacting instrument. When that system is followed I do not care which way you pack your gold, if you commence at the occlusal surface and end at the apex of the root, and do your work well, it will be solid. It is not necessary to pack it against the gingival wall. Keep that angle up, and pack your gold solidly against the surface. Dr. Fee has a tooth here that was filled at a clinic before this Society, I believe eight years ago today, at this place, by myself, demonstrating the possibility of building up with cohesive gold completely. I believe the only hand instrument that was used was to start the first small piece in a small pit at the gingivo-lingual angle. The balance was finished with the electric mallet, and entirely finished with cohesive gold. The tooth has been examined. He is a proper subject for inspection, and it can be shown today whether the filling is black or discolored. I remember the remark I made about that filling at that time. The tooth had been filled by four dentists in three years and had failed each time; and it had been pronounced so soft that it would not hold a gold filling.

Dr. W. C. Wendel:

I want to say a word in regard to starting a filling with cohesive foil. In former years the instructions we received, or at least that I followed in my early days, was to make a slight pit with a little spear point, to start the gold. I think that system was used in Dr. Southwell's tooth, which I filled for him before the Illinois State Dental Society seventeen or eighteen years ago, and was a demonstration as to time. He says I put in the filling inside of twenty minutes. I think it was all of thirty; but if any gentleman desires to inspect the tooth I think he is willing to allow him to see the size of the filling, and it would be something for our gold inlay men to look at and see whether they could produce it in the same time.

Dr. T. A. Hardgrove, Fond du Lac:

It matters very little who the first man was who invented extension for prevention. Dr. Black is no doubt entitled to the credit of putting it in proper literary form for publication; and it got an additional boost when Dr. C. N. Johnson put his shoulder to the wheel. The only thing wrong about this method of gold filling is that it ought to be a gold inlay. It is a grand method, and it is evidence of skill and ability, but how much easier and how much better it would be if it were a gold inlay. Then it wouldn't make any difference which way you malleted the gold. The clinic Dr. Maercklein made on Dr. Fee was a grand clinic, but I think Dr. Fee would have enjoyed the clinic much more if it happened to be a gold inlay; and it would have lasted just as long.

Dr. A. D. Black, Chicago:

In order to clear the minds of some gentlemen as to who the man was who first practiced extension for prevention, and as some seem to think there is some claim on the part of G. V. Black that he was the originator of this method, if they will be kind enough to read his writings they will find that he was thoroughly familiar with Dr. Webb's work, and certainly gives him the credit that was due to him.

Dr. W. C. Wendel:

Of course, Dr. Black does not decry what Dr. Webb has done at all; but it is his followers that are trying to create the impression that Dr. Black is practically the originator of extension for prevention. It is not Dr. Black himself, but it is his followers and friends.

Dr. A. D. Black, Chicago:

I was not sticking up for the followers at all (laughter).

Dr. C. J. Reinfred, Manitowoc:

Dr. Wedelstaedt did not mention anything about moss fiber, or any of the precipitated gold. I would like to ask him why.

Dr. J. S. Danforth, Sheboygan:

Dr. Maercklein spoke with reference to the angle in which the gold would be forced into the tooth, saying that it would make very little difference. Dr. Wedelstaedt's angles could not be improved on. To detract from them is simply to detract from the ideal; and that is what we are working for, is the ideal.

Dr. P. T. Diamond, Chicago:

I have two gold inlays in my molars, and one gold filling. My first molar was filled three times before it was filled the last time, by Dr. B. G. Maercklein, eight years ago, with cohesive gold; and it is now in A1 condition. The two inlays, put in less than two years ago, are decayed way up to the lingual surface at the present time. I don't know how I shall get them out. We can get the gold filling out easily. It is almost two-thirds of the tooth. With the gold inlays, I must lose a great deal of tooth substance. Dr. Hardgrove told me that he has not used any gold for two months. He is using porcelain inlays.

Dr. T. A. Hardgrove, Fond du Lac:

I am using both gold inlays and porcelain inlays. Wherev think the porcelain inlay is not of sufficient strength, I use the inlay. If the fillings in Dr. Diamond's mouth were put in with the foil method he would have no trouble at all in getting them out.

Dr. P. T. Diamond, Chicago:

The other filling, put in by Dr. Maercklein eight years ago, is now in my mouth doing excellent service. It had been put in by other dentists three times and failed. It is so large that it is two-thirds of my tooth. He put it in in about two hours. It is there to stay.

Dr. C. E. Bentley:

Is this an organization, organized for the purpose of advertising Dr. Maercklein?

Dr. P. T. Diamond:

I would say that this is an organization for the purpose of advocating the methods of Dr. Webb, carried out by Dr. Black and Dr. Maercklein.

Dr. R. G. Richter, Milwaukee:

The subject before us is the packing of gold. Unfortunately, I sat where I could not catch all of Dr. Wedelstaedt's remarks. I had to go more by what I could see. I may not have understood him rightly, or may not have heard him describe the packing of the last gold he has got in there. It seems to me that gold was left standing way outside of the cavity. He has not told us how he is going to reduce it. He said he packed it half way out to the margin, and left the other unpacked. I should like to have him, when he closes the discussion, tell us what his method is of finishing the outside surface of the margin.

Dr. E. A. Geilfuss, Milwaukee:

I should also like to have Dr. Wedelstaedt explain whether it is not a fact that the advantage of preparation and packing gold in the method which he has advocated lies in the fact that he is able to teach that method practically; that the methods can be readily described, readily understood, and for that reason easily taught; that the results obtained are more generally satisfactory as compared with methods previously taught which are equally good in the hands of competent operators but of a nature which would not do in the hands of incompetent operators.

Dr. E. K. Wedelstaedt, St. Paul, Minn. (closing discussion):

Mr. President, Ladies and Gentlemen: You all have heard the old story of the man who was hoeing corn out in the field in Kansas. He kept on hoeing corn, and directly he found himself in bed. He didn't know how he had gotten there. A cyclone had picked him up and carried him five miles. His neighbors had found him and taken him home. After he had been rubbed with liniment and several other things, the minister came over to see him. He sat talking to him about God, and about his narrow escape, and finally he said: "Brother, that was a fearful experience that you had; and do you know that in that awful ride you had, going that five miles in less than two minutes, God was with you?" The man, forgetting all about his wounds, raised up on his elbow and said: "Parson, is that so? Well, He must have been going some."

Now, Mr. President, I forgot all about Dr. Maercklein. I forgot that he lived in Milwaukee. I have seen those beautiful operations which he spoke about in Dr. Fee's teeth. I forgot all about Dr. Maercklein when I spoke of the ability displayed by Dr. Wendel and Dr. Southwell. I apologize to Dr. Maercklein, because he is equally as good an operator, and I am sorry I did not mention his name. I would not have had this discussion "going some" if it hadn't been for that. (Laughter.)

I never mentioned "extension for prevention." There is no man living in this world who respects the memory of Marshall H. Webb more than I do. Not a man in the dental profession; and there isn't a man in the dental profession who respects more the memory of every man who has gone before and left his stamp upon our times. I said nothing about cavity preparation, and I shall tell you nothing about cavity preparation beyond the fact that it is one of the essentials. All honor to Elisha Townsend, Jack Crooks, Marshall H. Webb, and all others, for, if it had not been for them, I would not have been here today, neither would the dental profession be where it is today. It is due to the work of those men who went before us, and laid the foundation upon which we are building.

I am very sorry that this thing has come up in this form, because I had rather that we had discussed methods and principles of packing gold. What is past is past. The profession is not where it was in Marshall H. Webb's time. We have advanced beyond that, and are building on the foundation which he laid, and the men of his time laid, for us to build upon.

I mentioned in my talk that the last condensing should be the wedging of the gold against the cavo-surface angle.

In looking over the literature of the past I find that to Dr. G. V. Black, of Chicago, belongs the credit of calling our attention to the use of certain lines of force in packing gold, to the stepping of the plugger point, etc.; for nowhere in our dental literature can I find anything regarding this subject prior to the time he wrote upon it in 1891.

I am asked why I did not mention any special brand of gold. Our good friend on the right desired me to enter into a discussion relative to the various brands of gold. I do not know but what as good operations may be made in cavities in the human teeth with one gold as with another. I do not know as it makes very much difference what kind of gold a man uses. I have always felt that gold foil was the best material to use. I have used many boxes of crystal foil; but I do not now use it because the Black method of preparing foil, which Doctors Searl and Wilson used this morning, is something which I picked up many years ago while studying at Dr. Black's. It is very simple, and above everything else a very definite method to use. If you wish an eighth you call for an eighth. That means an eighth of a sheet. If you wish a sixteenth you call for a sixteenth. If you wish to use a thirty-second you call for a thirty-second. You know precisely the weight of the pellet you are placing in that cavity. For instance, if you are using No. 4 foil and you call for a quarter of a sheet of gold, you know you are calling for a piece of gold that contains one grain; one-eighth of a sheet, one-half grain; one-sixteenth of a sheet, one-quarter grain; and you know precisely the size of the piece of gold you are placing in your cavity. When your filling is completed, you may say to your assistsant: How much gold did I use in that cavity?" It is easily computed; so many quarters, so many halves, so many eighths, so many sixteenths, so many thirty-seconds. You know precisely the amount of gold you placed in that cavity.

Our good friend from Milwaukee wishes to know about the teaching of this method; if I teach this because it is easily followed, and easily taught? There is one thing in regard to this method, and that is that it is the simplest method I have ever seen demonstrated. Being a simple method, it is an easily taught method, and a method which is easy for any intelligent man to pick up, if he so desires.

Now, our friend over in the corner: After the gold is all in position, these cylinders are placed and your cohesive gold is wholly in position, a condensing point is used at right angles to the long axis of the tooth, and all the gold condensed in this way. You may wonder how we condense it if the cavity is in the distal surface. For that we have reversed instruments, so that you can obtain direct condensation. I always fill my cavities too full, whether with amalgam or gold. I do so particularly with gold, so that the instrument marks may be removed in finishing the filling. Is that clear now? Is that satisfactory?

Dr. R. G. Richter, Milwaukee:

Wouldn't you have a more delicate finish pressing on the burnisher than you would with a blow on an instrument? There certainly must be some give to that instrument.

Dr. Wedelstaedt:

I have not used a burnisher in sixteen years. I use condensing points for this special part of the operation.

Dr. R. G. Richter:

Serrated or flat?

Dr. Wedelstaedt:

Both. Marginal condensers.

DISCUSSION OF DR. SOUTHWELL'S PAPER "ON THE PACKING OF GOLD IN THE AVERAGE CAVITY."

Dr. C. E. Bentley, Chicago:

I think there are gentlemen here who are qualified to discuss this paper better than I. I should imagine that Dr. Wedelstaedt would discuss it with vigor. I have nothing but commendation for the skill of Dr. Southwell, whom I know very well, and with whose operations I am quite familiar. I want to pay Dr. Southwell the compliment at this time to say that I know of no more skillful operator in the manipulation of gold than Dr. Charles Southwell of Milwaukee. I cannot agree wholly with Dr. Southwell, however, when he says that the packing of gold is a very simple matter. Dr. Southwell says a boy nineteen years old should be able to learn how to manipulate and pack gold into a cavity in ten days. His utterances are destructive, not constructive. While he makes the packing of gold a simple act and while he belittles the scientific method of the packing of gold, he does not give us a method for that simplicity. Now, I believe, and I think I know, that he has unconsciously acquired a method that is purely scientific in its construction, that makes him the skillful operator that he is, and yet he fails to give us a method for this skillful manipulation. No practical thing in the world is of any consequence unless it rests upon a scientific basis, and I am inclined toward the scientific basis that has been given to us by Dr. Wedelstaedt today, and an exhibition of which has been exploited, rather than toward the lack of method that Dr. Southwell has spoken of.

To be short, I have only this criticism of Dr. Southwell's paper: that he himself is such a master of the manipulation of gold that he thinks it should be of easy acquisition on the part of anybody else. He criticises other methods as being burdensome, but offers no substitute for that thing which he would destroy. He has failed to give us the method that has made him a successful operator and, inferentially, has belittled the scientific method given to us by Dr. Black, Dr. Wedelstaedt, Dr. Johnson, and their followers.

Dr. Southwell lays great stress on the mechanical mallet. I happen to know that at this time there is an investigation going on among scientific men as to the comparative solidity of gold under the impact of a mechanical mallet as compared to that of a hand mallet; and so far as this investigation has gone the great preponderance of evidence seems to indicate that a gold filling can be condensed more thoroughly under the impact of a hand mallet than under a mechanical mallet. Dr. Southwell has not given us any evidence as to the comparative solidity of these two methods, and until we have some positive scientific data no utterance is of value until we have the facts to warrant it.

I am opposed to Dr. Southwell's statement when he says that gold fillings should have little place in gatherings of this kind. I think the condensation of gold is as important as any other phase of dentistry; and until we have scientific evidence and foundation for the condensation of gold we will be compelled to listen to the details that belong to the condensation of gold even in our state societies. Dr. Southwell is too good a friend of mine to take any criticisms I have made personally; but I am compelled to go upon record as opposing some of the things he has said in his paper, and for the reasons I have indicated to you.

Dr. J. S. Danforth, Sheboygan:

Dr. Southwell neglected to mention the form of gold he uses. I suppose he must use a ribbon gold with a Bonwill electric or mechanical mallet. To use a mallet of that kind requires more skill. That is, you have to learn to use it; you cannot pick it up and use it as readily as you can the automatic or hand mallet, for two or three reasons. You have to gauge your distance from your filling more than you do with the other mallet, because with the other mallet you place it down and strike the blow. Supposing I had six or eight balls in a row, representing several layers of gold. If I should push them together and strike them they would all be welded. But suppose I struck this one (indicating), I would probably weld two, and the next would not be welded. You must consider that in welding gold with the mechanical or electric mallet.

Dr. Southwell (closing):

Dr. Bentley's attitude was certainly very kind and I am pleased that he felt that he could speak freely. This is, at times, a distinct evidence of friendship.

He spoke of what he considered a serious omission in my paper in that I did not offer a remedy or method. In reply I would have you recall that at the opening of my paper I stated it to be an intimate forerunner of the work I would attempt at the clinic tomorrow from which I would have you infer that the clinic would exemplify such remedy or method as I had to offer.

Perhaps I should have been more explicit on that point, for unless that is recalled clearly and with full significance his criticism may seem fully merited. However, in order that I may not be misunderstood, I will repeat in substance that the form of gold does not matter seriously, nor does the method. Every form of gold and every method has its successful devotee, but if speed, accuracy, specific gravity, and ease to the operator are desired, this combination of four factors is not to be found, in my opinion, in any of the methods to the degree that it is found in the methods that supply all of the force—i. e., the Bonwill mechanical or electric mallets.

My paper is criticised as being destructive, but I insist that the very opposite is true, for the ways and means, as will be shown in my clinic tomorrow, will teach that the gold in the average proximal cavity, in molars or bicuspids, may be perfectly packed in from fifteen to twenty-five minutes. Not only that, but the patient will have less to endure if a specific gravity as high is obtained by any other method. Are such teachings anything but constructive?

As far as the packing of gold in the average cavity is concerned, and I do not mean the complicated cavity that really requires some skill to do, but speaking of filling the average proximal cavity with gold, I really consider that to be so simple that it ought not to have any distinctly voiced method. That may sound queer, but I do not know how else to put it. I am honest in stating that I do not believe that it should take a very high order of manipulative skill to pack gold in the average proximal cavity. It is merely a question of nursing a material that will, with a compelling method, do just about as directed. In that respect gold is very agreeable.

As to any real difference in the choice of golds I am inclined in favor of the body of the filling to be made of cylinders and the surface to be finished with any good cohesive foil. As to methods there is a distinct choice to be made, however. I stated in my paper that an operator may pack gold reasonably perfect with hand pressure or with an automatic mallet, but when he especially desires solidity and speed he must adopt one of the methods that supply all of the force.

Dr. Bentley spoke of the specific gravity. Some time ago Dr. Wedelstaedt returned to me some gold that I had, at his request, packed with that plugger there (indicating the Bonwill mechanical mallet) in a steel matrix, I believe, although in the same experiments I packed some also in glass tubes. I was frank enough to confess to him, however, that I had broken some of the glass tubes. Today he took me one side and asked me how I packed the gold—if I put the steel matrix in a vice and used a sledge hammer. I bristled at this a bit, but he passed it off as a pleasantry and stated that he was compelled to allow a specific gravity of over 18.

Less than a year ago, owing to an abscess, I had occasion to remove a filling that I had placed in a lower molar. I pried the filling out intact. I sent it to Dr. Wedelstaedt to obtain the specific gravity, being curious to know the density of a filling that was put in under usual circumstances. In his reply he gave me a little over 18. Molten gold is 19.49.

In my practice I use Rowan's cylinders one-half of an inch in length for the main portion of the cavity. Ordinarily I finish with foil. One cohesive foil is about as good as another, so much so that I cannot state positively the name of the foil I am using at the present time.

I note nothing in the discussion that leads me to qualify any of the statements in my paper and I am ready at any time to prove true anything I may have said. The test that I would especially desire would be an opportunity to prove what I stated regarding a promising lad of nineteen. I appreciate the attention you have given my paper.

PROCEEDINGS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held February 12, 1907, with Dr. Elliott R. Carpenter in the chair.

Dr. E. A. Royce read a paper entitled "The Sequel to the Inlay."

DISCUSSION.

Dr. J. E. Hinkins:

In the main, I agree with what the essayist has said. We have a place for inlays, but I do not believe that they should be used so universally as they are at present.

With reference to using thirty-gauge gold, I question very much if cement can be left so thin as has been indicated by the essayist. Personally, I do not believe it is desirable to have so thin a layer of cement. It is necessary to have it thick enough to admit of leaving the molecules of cement normal, so that they will hold together. We know that some cements, if they are squeezed too close, will show air spaces, and if too thin, the molecules will not hold together. I am not so enthusiastic an inlay worker as some. I believe that we should depend more on good gold fillings than inlays.

Dr. J. W. Wassall:

After listening attentively to Dr. Royce's paper, I must confess that it is hard for me to tell whether he is in favor of inlays or against them. What he has said with reference to the Birmingham man's method is really an indorsement of the inlay method. I believe in a cement lining between metals and tooth tissue.

The essayist's arguments against inlays are specious. It must be remembered, no matter how much solution of cement there may be taking place at the joint as the years go by, it is a retarded process. If there should be a recurrence of the caries, it has been greatly retarded. I do not deny that we get recurrent caries at the joint of an inlay as at the margin of the foil filling, but it may not be from a defect, only from an operation of the same cause which produced the original caries.

Dr. Royce in stigmatizing inlay fillings did the same as was done by Dr. Johnson in his paper, read a short time ago. He compared inlay work with the higher grade of gold fillings. That is not right. We have got to compare the average inlay work, as done by average operators, with the average gold fillings, as made by average operators. There we will see a striking advantage for the inlay filling. I see gold fillings that have been put in by the best operators we have ever had in America. I saw a mouth the other day in which there were fillings that had been put into the cavities of the teeth by Allport, Ludwig and Dwinelle.

Doctor Brophy:

In one mouth?

Doctor Wassall:

Yes; and they were beautiful fillings. It was a mouth in which caries had taken place when the patient was a youth. It was beautiful gold work, and, as a rule, the fillings were all right. Some few of them I have been replacing with gold inlays, because of some caries and some wearing, but principally because they had not been completely contoured. There was not sufficient preliminary wedging; that was the great trouble. This man told me he spent half a day in the chair at almost every operation.

I saw the other day a gold inlay in the mesio-occlusal surface of a bicuspid that was made by Dr. Swasey. It was a large-sized gold inlay. It was well contoured, and the woman told me it was put in eighteen years ago. That was her recollection of it. It was brighter and better than any Allport or Dwinelle filling I saw in the mouth to which I referred. We rarely see examples of old inlays. I have one under observation myself. Of course, this inlay did not have nice occlusal surfaces as we make them now. The margins are perfect; the occlusal surface was well adapted, and there was no sign of any fissure at the margin.

I put in a gold inlay for a man who lives in Evanston some eighteen years ago, and that inlay is satisfactory now. It is doing good service. I see him three or four times a year. His mouth seems to be immune from caries. Dr. Whitefield has a gold inlay in a third molar which was put in many years ago, which is still very satisfactory. The cases of gold inlays I have seen of long standing are doing just as well as the cases in which gold fillings were inserted.

Dr. C. S. Case:

I have not had any experience in gold or porcelain inlay work, consequently I did not expect to be called on to say anything in regard to it. I wish to compliment the essayist, however, on the excellence of his paper, notwithstanding the fact we could not tell whether he was coming or going. I want to ask a question in regard to inlay work, namely, is it not a fact that the disintegration of the cement between the filling and the cavity differs very much with patients, the same as it does with ordinary cement fillings? In some cases we find that a regular cement filling will stand for years, while in other cases it stands but a short time?

Dr. C. N. Johnson:

I have been much pleased with the paper of Dr. Royce, because it gives us another line of thought. I am impressed with one thing always when this question of the saving of natural teeth by filling comes up, and that is this: One of the chief things is to seal the cavity against the invasion of deleterious agents which are likely to enter and cause a failure. If one man by the inlay method can accomplish that better than by the ordinary filling method, then that is the method for him to pursue. If another man can accomplish it better and more surely by the ordinary gold foil filling method, that is the one for him to pursue, because we know absolutely, beyond a question of doubt, that a perfectly inserted gold filling will do good service. That has been demonstrated too long to be gainsaid.

I am in full accord with Doctor Wassall when he makes the statement that to insert a gold filling in a case that would require half a day's sitting is not good judgment. I do not believe any of us are justified in subjecting a patient to a sitting for that length of time, and I think in that one respect the older operators erred very grievously. I think it was due to these long, protracted operations that much of the dread of dentistry was generated, and I feel that many of the old operators, conscientious as they were, having in mind simply the idea of accomplishing a perfect piece of work, forgot the nervous organizations of the patients they were operating on. But with our modern methods of operating I cannot conceive of any ordinary filling that will require a dentist half a day to insert it perfectly. When dentists speak of finding it necessary to take half a day or three or four hours to insert a gold filling, there is something wrong with the operator. If I have a case in which I am likely to subject the patient to too long a sitting, to too great tension, I will not hesitate to use an inlay, because I can do better service for that patient by putting in an inlay than I can a gold foil filling. There are many cavities in which some of the inlay enthusiasts are putting in inlay fillings that can be better managed by foil fillings than inlays. And the plea I make here is to discriminate and look at all phases of the question so broadly that we are able to operate on each individual case from the point of view of the best service to the patient and the greatest comfort to the operator. I believe with all the facilities we have today (and these facilities are very much more extended than they were ten or fifteen years ago) we are able to save more teeth than we ever were in the past. That is the whole thing in a nutshell—the possibility of the profession to save the natural teeth, and the man who does that to the best advantage of the patient and himself is the man who will discriminate and use gold fillings where they are indicated, and inlays where they are indicated. I believe in being eclectic in the practice of dentistry, and that if a man is conscientious in his work, one who sees the possibilities of inlay work and gold fillings, which cannot be denied, he will do the best service to his patient in the end.

At this juncture Dr. Arthur Holbrook, of Milwaukee, the guest of the evening, was called on to discuss Doctor Royce's paper, but said he was not familiar with the subject. He asked permission to read a short paper at this time, which was granted.

DR. ARTHUR HOLBROOK:

You have kindly invited me to meet with you and to partake of your hospitality this evening. This is a privilege I most sincerely appreciate, and I have accepted the invitation as an expression of your professional and fraternal regard.

Although as announced to you, in the acceptance, of my inability to offer you anything technical, yet it would be ungracious for me to sit here silent and unresponsive. The subject before you this evening is of greatest import to the progress and perfection of operations upon human teeth. There can be no doubt there is a useful place for the inlay, but to determine the proper place will be an important factor. The predominating consideration with me concerning inlays is somewhat personal, for, as you will learn from the little I may say, the inlay came just a little late for me, and the limited experience I have had with it will not justify me in occupying your time to tell of it. Therefore, with confidence in your kindly regard, I will ask your permission to digress from the subject under consideration and to offer some personal explanations concerning my disqualifications, and some thoughts upon matters regarding dentists in general. It is now 40 years since the faculty of the Philadelphia Dental College informed me I was duly qualified to practice dentistry. This guarantee was based upon the instructions they had given during a single term of less than five months, and after five years' previous practice. Upon returning to Wisconsin, I was the second, if not the first graduate of a dental college to enter upon the practice of dentistry in that state, the other being our lamented Chittenden. My other credentials were "native born," for at the time of my birth my father was just launching out as a dentist, and his office at that time and for many succeeding years was in or adjoining the family home. I was therefore a child of dentistry, and from childhood I have been familiar with dentists and dentistry, and that familiarity has existed unremittingly from that time to the present, only excepting two years of army service in the Civil war. It may not therefore be amiss if I attempt at this particular time to say something along the lines suggested by this anniversary of my dental experience. At the time of my birth our calling could not claim distinction as a profession. The first dental college in the world had just opened its doors, and with all that has come since that time, there is sometimes doubt regarding the actual position dentistry now occupies among the advanced professions. There can be no doubt, however, concerning the place it will occupy in the future if the leaders will hold true to their trust and the members of the profession will rise to their support. The progress made in dentistry is especially noticeable and interesting to all who have lived to watch its development. The present advanced position has not been attained by simple announcement, by a wave of a wand, or by a long series of society resolutions, but it has gained its prominence by a tireless energy and an unswerving fidelity of a few men who have "kept the faith."

All classes and callings of men have their leaders. A majority are simply followers or imitators. Comparatively few are qualified to take charge of great movements. Advancement and progress will be made more certain when the leaders are not only mentally qualified, but are also in sympathy with the struggles and discouragements of their followers. The work in the larger societies of our profession has often discouraged a large and earnest class of workers. There seemed to be no sympathy and no work for them, and the discordant clashings among the older members were more discouraging than inspiring. Members of the profession are beginning to recognize the value and the advantages of smaller organizations, where there is more heart to heart talk, and where the humblest can make inquiries and give expression to convictions without fear of an avalanche. It is perhaps trite to make a comparison between this condition and the division of large college classes into smaller groups. The time for boastful display and crushing criticism in society work is passing.

The great majority of our profession are not identified with society work. The movement to reach this class in this state of Illinois is apparently succeeding in a marked degree. The dentist of 60 years ago was generally an isolated being and dependent upon his own wits and skill in emergencies and at all times. We recall his limited resources and self-dependence and admire his steadfastness. But all about us at the present time are men whom the state boards and the colleges have dignified with the right to practice dentistry, who are as distinctly alone, secluded and unaffiliated as ever were the men who practiced their calling in the pioneer days and who were forced to depend entirely upon themselves.

The profession is handicapped in its efforts to advance by this large membership of men who do not contribute one particle of help, but who are always ready and quick to be helped by others.

There are cases, however, where the secluded may be brought forth, but sometimes I envy the man who is not unearthed. I most sincerely admire the man who has an all around experience and can tell others about it. During the first years of my practice I gave attention to all the demands made upon my personal abilities so far as I was able, but for nearly thirty-five years, it has so happened, not by choice, but by particular conditions of environment, that a single line of work has been allotted to me, and from which service I have not departed or turned aside to construct even one crown, bridge, or plate, or a mechanical appliance. It has been a wrong practice, and the extent of that wrong is painfully evident to me, if not to others. Whatever I may have accomplished in that single line of labor has been dearly paid for, and I would raise my voice in warning of the dangers and penalties that follow wrong practices. Restricted practice is often more congenial and alluring than a general practice, but it is not proper or profitable for any dentist to shorten or impair his days.

We are told that specialism in medicine is having a reaction, and that the general practitioner is coming again to the fore. Specialism is a necessity in some lines, but it is my belief that it must be entered cautiously in our calling. Marshall H. Webb was a dear friend and a classmate at Philadelphia, and whatever honor he may have achieved gives small compensation for a life early ended. The dentist who can daily turn from his chair to his bench or laboratory or to a variety of labor, has recreation and joy within reach. Cohesive gold, which has come since my advent, has been of untold value to dentistry, but heavy tribute has often been exacted from its devotees. If the life of Dr. Webb could have been spared to the present time it is barely possible, but not very probable, his magnificent work would be superseded by the milder and less exacting practices advocated by another of our classmates of 1866-7 (Dr. D. D. Smith). There are some changes, however, in the practice of dentistry that give great promise and bid us hope the days of intense strain, of nerve exhaustion, of long, tedious operations, are passing. Science, skill and ingenuity are at work to produce better services and better results without such loss of vital force to patient and to operator. Many changes in methods and practice have been proposed from time to time and been faithfully tried, only to be cast aside as failing to meet the requirements.

Of all the recent innovations for preserving teeth, the inlay of porcelain or gold gives greatest promise of permanency. There are other changes in the operative, the mechanical, the surgical, the educational, and in all the departments of dentistry that would astonish and bewilder the practitioner of 1840. It would be tedious to even enumerate them. Let us be thankful we have them and have lived to see them. One of the noticeable changes, however, is the growth of the membership. The rush of young men to our profession just now is and for some time has been enormous, and no signs of abatement are discernible. The increase is out of proportion to the increase of population, if not to the actual necessities. Let us take the city of Milwaukee for an example. With the help of an experienced statistician I made a table of comparisons a few years since, which I gave to our local society. This table showed that during the first twenty-five years of my sojourn in Milwaukee, 1873 to 1898, while the population of the city had multiplied three times, lawyers had multiplied five times, physicians had multiplied five times, and dentists had multiplied ten times. In other words, in 1873 Milwaukee had one dentist to every 6,000 population, while in 1898 the ratio was one to every 1,900.

A similar comparison of the state outside the city during the same period showed that while the population of the state had multiplied two times, dentists had multiplied seven times, and also that the percentage of increase in the state was surprisingly larger than that of the city.

It is possible these large additions to professions are necessary, but with all the improved and perfected appliances to assist, lighten and to hasten the labor of the dentist, it may be well for us to ask if this great increase of dentists is necessary or healthful, and what motives or considerations have induced discrimination in favor of dentistry. Is the profession or are the people responsible for this influx? Are the ideals and standards of our profession more inviting than the ideals and standards of other professions? Are dental colleges requiring higher qualifications and giving higher ethical instruction?

Notwithstanding the great progress made in dentistry, the high standards adopted by colleges and examining boards, and the benefits that are conferred by society affiliations, there is a spirit of commercialism so prevalent that undoubtedly many young men are misled regarding the dignity and the usefulness of dentistry. If our profession has not attained the dignified position which should be accorded to it, the members of the profession, and not the people, are undoubtedly at fault. These random thoughts and reminiscences are given with heartfelt pride in the great progress and success of our profession, and with the strongest faith in the high place it is destined to occupy in the future.

This day commemorates the ninety-eighth anniversady of the birth of the great leader, who never wavered or slackened in his duty during the dark and tumultuous perils that threatened the life of our nation.

Let us rejoice in the progress of our chosen profession, and in our desire to place it high among the great and noble professions, let us remember the immortal words of Lincoln:

"With malice toward none, with charity for all, with firmness in the right as God gives us to see the right, let us strive on."

Dr. C. E. Meerhoff:

There is very little that I can add to what has been already said in regard to the pros and cons of the inlay proposition. I find it difficult to get away from the use of inlays. It requires a little more than ordinary judgment to induce one to avoid using gold inlays in many cases where ordinarily a filling would be inserted. There is one feature which appeals to me more than any other in the discussion of this subject, and that is the ease with which the interproximal spaces with the proper contact points may be cared for. Comparing the average of gold fillings and gold inlays, I think we will find better contours and a better condition generally where the inlay is used. This is probably because in the case of the latter more of the work is done out of the mouth, where the excess of filling is taken away, and we do not require so much space and wedging before filling as in the insertion of gold fillings.

I am fully in accord with what has been said in regard to the use of cement in the preservation of tooth substance.

Dr. J. H. Woolley:

I commend the paper of our essayist, Dr. Royce, and especially the paper of our guest, Dr. Holbrook. Dr. Holbrook's paper is fresh; it sparkles with keen humor, and it is so rich in thought, in reminiscences, that it adds a great deal to what I am pleased to call the joy of the evening.

With regard to Dr. Royce's paper, I cannot say very much about inlays, but I do think the subject of inlays and inlay work is a progressive one, is growing, and although many mistakes are made, yet there are greater possibilities than we know of at present in inlay work. Of course, I am a believer in gold fillings, and in the way we used to operate years ago, gold fillings in the cervical borders could be so molded to the walls that when the operation was complete there was a perfect joint.

In regard to these new things that come up, it is tedious for me to take hold of them. However, when inlays first came up I put aside my regular practice for two days and began to dig in my office. I experimented and experimented; I conversed with those who were inlay workers, and saw that this was the only thing to do, as I did not propose to grow old.

In regard to the danger of decay at the borders of cavities, I wish to illustrate this by mentioning a case. A gentleman came to me who had some fine fillings in his mouth, but they were leaking. They had been inserted by a good dentist. I filled these teeth with gutta percha, and kept them so filled for two years, then removed the gutta percha fillings and found that a great change had taken place in those borders. I refilled the cavities with gold, with no recurrence of decay. In many such cases where the tooth structure is soft, I have operated in that way.

Dr. Johnson:

I would like to ask Dr. Woolley if in those two years he concludes that a decided change had taken place in the tooth structure or in the condition of the patient's mouth, so that the case became one of immunity rather than one of susceptibility? In other words, was it the tooth structure that changed, or the condition in the mouth that changed?

Dr. Woolley:

That is a leading question. Anyway, the practical solution was that the teeth were harder, so that I felt justified in refilling the cavities with gold.

Dr. Johnson:

What caused the teeth to become harder?

Dr. Woolley:

I do not know. His physical condition seemed to be just the same. I know the tooth structure was harder, and I have operated on many cases successfully in that way.

Dr. Truman W. Brophy:

Part of the education of a soldier is to learn not only how to advance, but to learn how to retreat. The essayist has given us a practical demonstration of how to put himself in a position to retreat, if necessary. (Laughter.)

I would like to compliment the essayist and speak about his paper, but I hope he will not consider I am passing it by without doing it justice if I only say a few words, and devote what further time I have at my disposal to the paper of my friend, Dr. Holbrook. I feel that this subject of inlays should be discussed and discussed. I believe there is a lot of room for improvement. Dr. Wassall expressed the whole situation when he said we must consider them in the same light that we consider everything else. We must consider them not from the point of view of the expert in comparison with the insertion of gold fillings; but we must consider them from the standpoint of the average operator as they are used. We know there are a great many poor gold fillings put in; and the same is true of gold inlays. What we want to do is to improve the conditions, so that there will be better inlays made, better gold fillings inserted, and more of them. If I leave the subject of Dr. Royce's paper, which contains so many things that are interesting, valuable, and really new, as I cannot discuss them if I were to try, you will pardon me, and I will pass on to say something about the paper of Dr. Holbrook.

In 1872 I came back to Chicago from the Pennsylvania College of Dental Surgery, in Philadelphia, from which I graduated. I was the seventh dental graduate in the city of Chicago. There were about fifty dentists here then. In my class was a young man who came to Milwaukee, located there, and was associated with Dr. Holbrook. His name was Dr. Babcock. He is not living now. My first visit to Milwaukee, after I came back, was to call on Dr. Babcock, and there I met Dr. Holbrook. Shortly after that I attended a meeting of the Wisconsin State Dental Society, and as I entered the hall Dr. Holbrook was reading a monograph that was gotten up at the request of the society, giving instruction to the people regarding the care of the teeth. I remember very well how that monograph was used, not only in the State of Wisconsin, but in other States. I think quite likely it was distributed all over the country, and perhaps in Europe. That monograph answers in part one of the questions the doctor put, namely, why is this increase in the number of dentists so greatly out of proportion to the number of practitioners in medicine and in law? Prior to the issuance of that monograph there was no such information imparted to the people of the State. It awakened interest in the subject, and it brought to the attention of the people not only the importance of dentistry, but the necessity of the care of the teeth, the possibilities of dental operations; that the loss of teeth and the making of artificial dentures were not called for if the people made use of the knowledge that this monograph imparted; they would be able to save their teeth. And so this monograph made it necessary for other dentists to engage in the practice of dentistry to supply the great demand. Monographs have been issued and lectures have been delivered on this subject; and the medical profession has awakened to the importance of a knowledge of the subject of bacteriology and of oral hygiene, and so the number of dentists has necessarily increased out of proportion to the number of men engaged in the practice of law and in the practice of medicine, and the number of dentists will continue to increase as the subject of oral hygiene is better understood throughout the world, as there must necessarily be an increased number of dentists to provide means by which oral hygiene may be practiced.

Regarding Dr. Holbrook's work in Wisconsin, I have a profound regard for a man who has scholarly attainments, who has labored so hard in making a part of the literature of our profession, who is capable of establishing an association such as the one that exists in that State, and such dental societies as there are in the city of Milwaukee. And I say this, gentlemen, without the slightest hesitancy, for of all men in the dental profession who have ever lived in the State of Wisconsin, we have with us this evening a man who has contributed more to the uplifting of the profession of that State than any others who have ever lived therein. (Applause.) How beautiful it is to have with us a man whose mind runs along the lines of the classics, and who is able to produce and bring before the profession an article such as he has read and to which we have listened. When I see and feel the influence, as I always have, of the work of this man, in carrying out and uplifting the profession, I cannot help but appreciate it to the full. There is not a man in Wisconsin engaged in the practice of dentistry who has not profited by the example that has been set by the work of Dr. Holbrook. There is not a man in the city of Chicago, or scarcely in the State of Illinois, who has not profited by the lives and work of Allport, Cushing, Dean, Swasey and other men who were experts in practical dentistry, and as we live to reap the fruits of their planting, we certainly ought to be doing something for those yet to come. I feel that we would be poor, wretched, if it were not for the richness of the inheritance that has come to us through the lives of those men. We cannot in words express our feelings. We cannot show to the world how much we regard them; how much we appreciate their work; but with all sincerity I feel that they have made our ways much easier. When John C. Fremont was called the great pathfinder of the West, and made the way for others to follow, he was regarded as one of the most conspicuous figures in our country. Dr. Holbrook has told us that his father, even before there was an organized dental profession, instilled into his mind the duties and work of a dentist. When I was down East a few weeks ago, attending a meeting of the Horace Wells Club, in Hartford, Conn., I was impressed with the fact that only sixty-two years ago anesthesia was introduced to the world. Prior to that time people suffered very much during surgical operations. We must necessarily feel that we are under a heavy debt of gratitude to those who hewed our paths.

Dr. Holbrook, we are all glad to see you here this evening. I have known you longer than anyone here. We have a society of good fellows; we meet here once a month. We have a delightful time. We are the better for it, and we go home feeling better and wiser. We hope you will find it possible to attend our meetings often, and whenever you do, you will always receive a cordial welcome.

Dr. V.-B. Ames:

I have had a feeling, at times, in the last year or so, in this small society, with its limited membership, and that membership full, that it probably ought to be up to me to send in my resignation, in order to make room for someone who is more closely identified with it. But I am thankful that did not come to pass before this meeting, inasmuch as I have been very glad to be a member of this small organization when Dr. Royce presents these very pat ideas; and, furthermore, to have the extreme felicity of being present when Dr. Holbrook visited us.

It is quite a surprise to me to find Dr. Royce advocating the plan he does of the assistance of a film of cement in the construction of gold fillings, when my ideas of Dr. Royce have always been associated with twelve hundred raps to the minute or second (I have forgotten which) in the malleting away of gold foil. The idea of using a film of cement in the manner he has mentioned in the placing of a gutta percha filling must appeal to us all. But that is a new one on me. I can see, however, where the value of it comes in. As he tells us about the swaging and forming of thirty gold to the cavity over a film of cement, I can see in my mind's eye how that cement would work to the edges, and he would have a surplus of this gold foil at the peripheries, which would give a clean field of operation, and he would be able to pack that over with some kind of crystal gold or mat gold, such as he has been using lately, and I can see how in his hands that would be a very expeditious operation, and if the gold is properly adapted, you only have a film the thickness of one layer of the granules of cement. You would certainly have a cement joint, and from my knowledge of the surface of such a joint we would have a practical filling. However, that joint must be almost infinitesimal when we think of how the powder of properly prepared cement, when reduced to a fine state, has granules the thousandth of an inch in size, as determined by the micrometer. These measurements, as they have been given to us in the past, have been misleading. The cement granules will allow of closer adaptations than these measurements would indicate.

Dr. J. G. Reid:

Like the rest of the members, I have not found out what the sequel to the inlay is from the standpoint of the essayist. He commends and dodges a little. I do not pose as an expert in inlays, and I am not going to pose as a remarkable operator of gold fillings. I only pose as an ordinary, common, average, everyday man who tries to save teeth. That is what I believe my mission is in this world, to save the teeth of my patients to the best of my ability, and any method that I can adopt in my practice by reason of the best judgment I have and can adapt it, that is the course I purpose pursuing. I am not running wild over inlays at the present time. I am not over-enthusiastic. I have seen a great many inlays in the past four or five years, and in comparison with gold fillings I am not ready to say at this time that they will supersede and take the place of our best methods of good gold work. I believe that the man who can put in a gold inlay, or a porcelain inlay, at the right time, or who can put in a gold filling, an amalgam, gutta percha, or cement filling at the right time, is the best dentist in the end. He does the best for his patient.

I read a paper before this Society two or three months ago in which I made this statement: The inlay had come to stay as one of the methods of practice, and I believe where that practice is conscientiously exercised under the indications where the inlay should be used, it is good practice. That is the position I occupy today. Of course, I am always ready to retreat, as Doctor Brophy has said, when it comes time to do so; but I have not yet seen the time to retreat from the adaptation of good gold work that has stood the test of years. I had a patient in my chair today for whom I put in 22 gold fillings over twenty-one years ago. Only two of those gold fillings have failed in that time. There are plenty of men here who have had equally successful results under such circumstances. Considering the success I have obtained, I am not willing to cast aside my gold work for inlays. I am, however, willing to cast aside the overwork which we have all done many times in years gone by, as Doctor Johnson very beautifully expressed it tonight. I cannot see the propriety of breaking our backs and punishing our patients with long operations, say three or four hours at a time. Prolonged operations were frequent many years ago.

Some of the speakers spoke about dentistry thirty or forty years ago. I can go back thirty years myself and talk about dentistry with considerable pride, and as has been beautifully expressed by the speakers previously on the floor, the men who were before me, who have been pointed out as notable examples of high professional attainments, I have tried to follow throughout my professional life.

Speaking about Doctor Holbrook's monograph, I got hold of one in 1877. I believe I have it in my library now. I have read it more than once, and if some of you were to read it today you would find some excellent ideas in it that would apply as well today as they did thirty years ago.

I am glad to have had the pleasure, again, of meeting our honored guest at this table. It has been several years since I shook his hand; I think it was in Milwaukee twelve or fifteen years ago during a meeting of a society. I am glad to see him looking as young and healthful as he is, and may he live many years more is the wish of your humble servant.

Dr. L. L. Davis:

I think the discussion has wandered a good deal from the article of the essayist. I think, for one thing, he erred in the title of his paper. The title, as sent to the members, has misled them as to the topic for discussion. One of the things that happens in the use of the English language is that sometimes we cannot find the word we want to use to express ourselves clearly. Had he said "conclusion," that would mean the termination. He wanted to use the word "sequel." If he had said "the sequel of the inlay," instead of "sequel to the inlay," his idea would have been expressed more forcibly and clearly, and the discussion would have been more pointed. Just as soon as he got through reading his paper, I stepped around and told him the thing was far from what I had expected, and I thought he used the wrong title, and I found that was what he had done, and the only gentleman who has really discussed the paper or brought out that idea was Doctor Ames. The essayist means to say we can use cement under all conditions, whether it be a gold filling, or a gutta percha one, and those are the two extremes of the materials we use in saving teeth. He claims we can use a thin layer of cement under a gold or gutta percha filling. Whether that is all he claims for it, I am not willing to say, because he has experimented, and I have not. He has drawn conclusions from the statements of expert inlay workers. He does not draw deductions from his own results, but takes their claims and deduces the fact that cement under any filling is better than the filling itself next to a tooth. That phase of the subject has not been discussed; but that is what the essayist wanted to bring out.

I wish to add my tribute to those already given to Doctor Holbrook. He is one of the old pioneers we all like to look up to and hope to follow in their footsteps. We are glad he is with us as the first guest of honor of the Odontological Society of Chicago.

Dr. Elliott R. Carpenter:

There is little I can add to Doctor Royce's method of using a thin layer of cement under a gutta percha filling. If any of you have had a temporary filling of gutta percha in your mouth, you must must have experienced discomfort from the introduction of sweets. Now, Doctor Royce put in three of these gutta percha fillings for me about two or three months ago, and they were on the occlusal surfaces of bicuspids and molars, and I masticate well and have given them good, hard wear. The filling was ordinary base-plate gutta percha, and he told me of the introduction of cement under it. So I had him try it on my teeth, and I have been masticating ever since with perfect ease. Just that one little thing in the paper is worth the price of admission.

Doctor Royce (closing the discussion):

My paper has been discussed so very little that there is not much to say in closing. I have been using soft cement under all filling materials except gold for about ten years. I began adding hydronaphthol to the cement first, and found it worked so nicely that I have used it in many places where I did not care particularly for the quantities of the hydronaphthol. The use of cement under fillings has been brought up to some extent by different dentists for the last year or two. I believe Doctor Tuller had an article in the *American Dental Journal,* in which he speaks about using cement under amalgam; and one New York dentist has also used cement under amalgam. And cement has been advised under gold for the starting of the filling; but the difficulty of manipulating the gold in such a manner as to have a fine line of cement at the margin is so great that I have never been satisfied with it. I have a great many fillings in which I put cement under the gold by other methods, as, for instance, using non-cohesive gold for the start, but I have not been satisfied with using cement under gold fillings. I do not see wherein I have abused inlays, as intimated by Doctor Wassall, any more than any other conservative dentist has abused them. I have put in gold fillings over cement where I got the filling in almost as quickly over the cement as I could get an impression for an inlay, to say nothing about making the inlay. Unfortunately, I have not several assistants in my office who can make inlays for me. One of the advantages of this method, as given by the Birmingham gentleman, I did not mention, but it has reference to preservation at the cervical margin. You can, by introducing cement and putting in a piece of foil and swaging it to place, allow that foil to extend over the gum and go on and fill the cavity, and the foil will act as a shield against moisture. I had a cavity yesterday in the lingual surface of a lateral, in which I allowed the foil to extend over the gum, a place where it was absolutely impossible to adjust the rubber dam. I put in that filling so that the cement line was invisible, with the glass I have passed around, in the very best daylight I could get. I really believe I put in the best filling that I could possibly have inserted in that case. In no part of my paper did I advise the use of cement under a gold filling where the gold filling would do the work. I distinctly stated that gold fillings have done the work in a certain class of teeth. As to making the line of cement so narrow that the cement will disintegrate, it appears to me very much like the glue that is used between two pieces of board. If you see a piece of furniture put up so that the glue between two boards shows, you have not got the sealing qualities of that glue. I have been using cement after the same manner. If I can work gold over the margins and cannot see the line of cement with a reading-glass, I think I have got the cement pretty nearly protected, and I would rather have the gold exposed to the wear and secretions of the mouth than to have the cement.

As to the advantage of using foil, I have not experimented with it enough, so that I can not say very much about it. I have put in, I presume, a dozen fillings with it, and occasionally I use a matrix. In using a matrix with the foil, I put on the rubber after I had cleared the cavity. I then put in the cement and swaged my gold to place. Before the matrix was put on, I burnished the gold about the two walls. I put on my matrix and filled the bottom of the cavity with moss fiber gold, built it up, being careful in building the corners. I could not see the line of cement anywhere upon those margins, and they polished down as well as any gold filling I have ever put in. I do not think I should use it in teeth where I could protect them with gold without it. An extreme case in practice would call for a thing of that kind, and I had such a case for a lady some time ago. Cement in her mouth would last about six weeks, and gold fillings probably two years. If I had combined the two, I believe she would have had a filling which would have lasted longer.

Doctor Wassall:

I would like to ask Doctor Royce what he thinks would be the effect of malleting gold in a matrix that has been cemented into place? In other words, what he thinks would be the effect upon the thin film of cement that intervenes between the 30-gold and the cavity wall after it is crystallized?

Doctor Royce:

I do not know that I should mallet on that. Certainly, I should not mallet toward it. I do not mallet directly toward the wall except at the cervical margin, as that is one of the things I do not believe in.

Doctor Wassall:

Would not the malleting pulverize the cement and cause it to become more or less disintegrated?

Doctor Royce:

I cannot see how it would do that. The cement that we put in for an inlay requires some time before it is crystallized. If any malleting is done, it is not against the walls of the cavity, but parallel to the walls.

Doctor Wassall:

How about the floor of the cavity?

Doctor Royce:

The floor of the cavity is filled before the cement is crystallized. I cover over the cavity before the cement sets.

I agree with what Doctor Johnson has said with regard to long operations. When I can put in a gold filling in say thirty or forty minutes, I believe I can do it more easily and with just as much satisfaction to my patients as I can put in an inlay, and in such cases I prefer a gold filling to an inlay. I passed the glass around for the purpose of showing what the first experiment indicated, and not to show that the filling was perfect, and while we can have sloppy work with inlays, we can likewise find sloppy work done with gold fillings without cement.

Before taking my seat, I wish to express my pleasure at the presence of Doctor Holbrook. I have never met him until this evening. The latchstring of the Odontological Society is always out for all good dentists who come to Chicago, and I was particularly pleased to know that he was to be our honored guest this evening. His reputation is such that we feel ourselves honored in entertaining him.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States, its possessions and Cuba and Mexico. Canada, $1.40. All other countries $1.75 a year.

EDITORIAL.

THE QUESTION OF PLAGIARISM.

So long as there is the immense amount of printed matter going out to the world, so long will the question of plagiarism come up. An apparent plagiarism of ideas is a very natural thing to occur. Minds, whether great or not, often run in the same direction, and it is not strange that there should sometimes be a similarity in the manner of presentation of the same ideas by two individuals. But when several pages of an article are copied, word for word, without any credit being given to the original author, there is either a serious oversight or something worse. In the July issue of THE DENTAL REVIEW appears an article on "Dentistry a Specialty of Medicine." It was read before the Wisconsin State Dental Society, and was published in the regular order of the proceedings of that society. It now appears that almost the entire article was copied, literally, from one published some time previously by Dr. A. B. Conklin, of Ambler, Pa. When the attention of the Wisconsin essayist was called to the matter his explanation was as follows: "Relative to the essay, entitled 'Dentistry a Specialty of Medicine,' the ideas brought out by the writer of that essay were so well defined that they appealed very strongly, and I felt that it would be doing the author no injustice by bringing the matter, with some additions, before the profession, with the kindest intentions. Trusting this explanation will be entirely satisfactory to Dr. Conklin, I am, very respectfully, ———."

The intentions may have been altogether kind, but the result was an injustice in three directions—first to Dr. Conklin, for failure to give him credit; second to the Wisconsin State Dental Society, for bringing before it an article which had already appeared in print and having it discussed as the essayist's own, and third, to The Dental Review, for causing it to break a rule it has always followed since its inception of not printing any article which has previously been published.

It is the manifest duty of every writer to give credit for the matter used from the pen of another, and a failure to do this invariably subjects the delinquent to the severe censure of right thinking men. It is probably a fact that writers often commit this offense without a due appreciation of the extent of their wrong-doing, but when the stigma which usually follows a breach of this kind is fully understood it is hard to conceive why men will continue to take the chances of bringing such a signal reflection upon them. To the younger men, particularly, it is necessary to instill the lesson that such practices inevitably bring down upon the author a just retribution in the estimation of the public, and no man of any self respect can afford to follow them.

THE DEATH OF DR. W. D. MILLER.

While the editor of this journal is on his vacation and far removed from any source of detailed information, word reaches him of the death of Professor Miller. Nothing but the bare intelligence is available at this time, but he can not let the journal go to print without at least a brief expression of his great personal sorrow, and without a slight tribute to the memory of the man who has done so much for dentistry. Of all the great names which have added luster to the profession in the past century the name of Miller stands out in some respects the most brilliant. He it was who first gave a definite status to the question of the etiology of dental caries, and his work in this respect has long since established itself as a classic. Miller possessed the rare combination of a charming personality, an acute observer, a deep student, and a tireless investigator. He, an American, went to Europe and through sheer force of his intrinsic worth gained a recognition there which has never been accorded any other man.

The years alone can tell us the ultimate result of his life work, but this we know today, that the impress of his distinguished service has been no small factor in directing the scientific dental thought of the last quarter century.

That he should have been taken away apparently in the prime of life is a great loss to the profession and a source of the most profound sorrow to his many friends.

THE EDITOR'S DESK.

JUST ANOTHER ONE.

Last year I spent part of my vacation on an island up along the east coast of Georgian Bay, between Parry Sound and Pointe au Baril, as the guest of my friend, Dr. Cunningham, who lives at the Sound and who knows how to enjoy life better than any other dentist I ever met. He owns a couple of islands about twenty-two miles above Parry Sound and has a snug cottage and a good dock at one of them.

I had intended this year devoting all my vacation to writing up some stuff that has been befogging my brain for months so as to get it clear for the winter work, and it seemed impossible to give time to anything like the ordinary vacation pastimes. But the siren song of the winds and waves got in my ears, the charm of primeval nature came over me, the memories of black bass on the line and in the platter allured me, and finally the insistent mandate of Dr. and Mrs. Cunningham that I should spend a few days with them at Esther Island broke down all my barriers, and one morning I put on some old clothes, made a pretense of packing my grip and took the train at Blackwater, Ontario, my summer home, for Parry Sound.

This time I had with me the Veteran, who has camped out under many a moon, who has slept among the mountain lions and rattlesnakes of California in the early days, who has shot deer, trapped beaver, otter and mink, and caught trout, bass and muskalonge. So I was well equipped for a companion.

But the Veteran had never been to Parry Sound, which means that he had missed the best spot in the world for sport.

We arrived at the sound between three and four in the afternoon to find a gale blowing from the northwest, which precluded all possibility of reaching the island that night. Last year, when I was there, the Doctor had a fine gasoline launch, the "Emerson," over which I had gone a good deal daffy, and when a few months later he wrote me that he had sold her I felt like asking him to rise up and explain. But when he showed me this year the new one he had bought in her place I immediately capitulated. She is larger than the "Emerson" and altogether a stauncher craft, as we had reason to learn later. She is called the "Hermes," and whenever I hear that name after this I am going to rock myself to sleep in memory of the happy hours we spent on board this little gem.

The Veteran had never been in a "gaser" before, and though the waves were rolling mountains high in the Sound, the Doctor suggested that it might be good fun to poke the "Hermes'" nose into them for a few minutes. He put his son Lorne at the wheel, while he took the engine, with the Veteran and I sitting where we could do the least harm. Hully gee!! the minute the first wave bit her she plunged at it like a little bull-dog, then, steadying herself, she began to make the most graceful and energetic obeisances over at Parry Island, across the sound, as if she were having the time of her life. The farther out we went the worse it got—I mean the better it got—till the "Hermes" was acting like a rocking horse, trying to turn "summersets." Lorne was bare headed and soon soaking. Every time the "Hermes" split the crest of a wave she would send the spray swishing over the forward deck and up into Lorne's face. Then it would travel along the sides and hit us each a spat as it went by. I had a few tears on my cheek from the Georgian Bay, and the Veteran looked and blinking between the splashes at the thundering waves pounding down toward the shore and remarked: "How in the world, Doctor, are you going to turn around in this sea?" Quick as a flash the "Hermes" proudly curved her bow and came up quartering on a combing wave. The next instant she was quietly rocking in a trough, and the next, she was scudding for home like a water rat, shaking the wet from her sides. It was all done so quickly and so neatly that no one could lack confidence in the "Hermes" after that. As we stepped puffing and exhilarated on to the landing in the boat house, Dr. Cunningham quietly put his pipe in his mouth and turning his coat pocket inside out emptied a pocket full of water on the floor. "You see," he said laughing, "that pocket is made so it won't leak." Surely it was fun sticking the nose of the "Hermes" into the waves.

As we walked up over the brow of the hill toward town everyone predicted that the wind would go down through the night so we could start for the Island in the morning—the wish, of course, being father to the thought. Bright and early the Veteran and I were out of bed the following day and up over the hill to see what the weather was like. But

> "De win' she blow, blow, blow,
> Bimeby, she blow some more,"

And the situation looked warped. "Can't we run down the south shore and fish under lee of one of the islands?" someone suggested. "Yes," said the Doctor, "we could do that, but I don't know the fishing holes so well down there. Wait," he added, "I'll be back in a minute." And away he went. In a short time he returned with a satisfied look on his face, and announced that we were to go to Esther Island. "The 'Hermes' would take us up with perfect safety," he said, "but we would all get a soaking. A little of that is all right for fun, but twenty-two miles of it would cool the fun, so I have made other arrangements." We soon learned that his "other arrangements" consisted in chartering a large towing tug to carry us up and tow the "Hermes" behind. That man simply won't be stopped when a friend's comfort and enjoyment are in the balance. If a tug had not been available he would have chartered a whaleback, and if he couldn't have secured a whaleback he would have wired New York to express the "Kaiser Wilhelm der Grosse" overland to Parry Sound, by the shortest route to take us to Esther Island.

The trip up was fine. The "Hermes" took the waves like a little duck and though she at first seemed to resent the indignity of being towed by any other power than her own, yet she soon lost her resentment in the delight of sporting in her native element. The Captain of the tug was a jolly Frenchman, Jack by name, full of mischief as a street car is full of folks during rush hours, and he and Dr. Cunningham had some rare passes at each other during the trip. "Say, Doctor," said Jack, in all seriousness, "I have some teeth that I want fixed ————." "Don't talk to me about teeth when I am on a trip like this," said the Doctor, cutting him short. "But I wanted merely to ask you about it because I am on the water most of the time and don't get a chance to go up to your office very often, and I thought I would just ask you if ———." "Oh, yes," said the Doctor, relentingly, "I'll fix your teeth up, Jack." Quick as a flash, Jack's hand went in his pocket and out came some of the worst specimens of animal's teeth that ever chewed wild things, which he had taken from a skeleton on the shore. "These are the teeth I'd like you to fix," he said. The Doctor never batted his eye but quietly took the teeth and put them in his pocket. The only evidence of disturbance was a slightly harder pull at his pipe. "The Doctor isn't feeling very well today," said Jack, turning to me. I said I thought he was in pretty good health so far as I could see. "Oh, no," contended Jack, "if he was feeling well he would have had me chucked overboard by this time."

(To be continued.)

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Cause of Empyema:—By far the majority of cases of empyema of the antrum are produced by infection from the nasal passages, and not from the teeth. We are taking such good care of the teeth now that we have very few such causes. In this country we do not have so many infections from the air passages as they do in London. I think the percentage of antrum trouble there is very much greater than it is in this country, due to the fact that we take better care of our teeth, and the atmospheric conditions are better.—*R. G. Richter, Milwaukee, Wis.*

"Fistula" or "Sinus":—To my mind, the word fistula should be applied to an abnormal tract which carries some one of the normal secretions of the body: such as a salivary fistula, if we have an opening through the chin so that the saliva passes through, or a urinary fistula, if we have an abnormal opening, so that the urine is discharged through that. Sinus is the name applied to a tract that carries pus. We can improve our nomenclature by using the word sinus when referring to a tract that carries pus, and fistula to the other.—*Arthur D. Black, Chicago.*

Materia Medica:—The department of materia medica is one that is sadly neglected, not only in the societies, but in the writings of members of the dental profession and of the medical as well. Among the other drugs we talk about might be mentioned phenol. It is in common use and is known as carbolic acid. It is one of the most dangerous remedies that is given. It will cause gangrene; it can produce phagadenic degeneration of the tissues of the body, and yet it is used daily. Every young man should know exactly what he gives to his patients in the way of medicines, effects, dosage, and danger, if any.—*A. C. Hewett, Chicago.*

Have Confidence in Yourself:—We all possess various endowments and live in different environment, and do not think that one individual's aspirations equals another's perspiration. Remember there are two voices sounding in your ears—one of fear, the other of confidence. To which one will you take heed? It is our ignorance that holds us down. We have neither the time, the energy, nor the disposition to discover the real meaning and aim of life, because all our capacity of acting, operating, or producing an effect is absorbed in the bare maintenance of existence. If you never learn to demonstrate the power of thought, you will continue in ignorance. Surely if we do not think well of ourselves, no one else will.—*James Wilson Cormany, Mt. Carroll, Ill.*

Absorption of Deciduous Roots:—I think it has been conceded that the roots of the deciduous teeth do not absorb physiologically after the death of the pulp, and in that belief I have been in the habit of retaining deciduous teeth in place, and yet allowing eruption of the permanent teeth by grinding away the entire crown of the deciduous molar, in that way allowing its expulsion from the alveolus by the oncoming permanent tooth. I sometimes would leave the pulp canals entirely open, instructing the mother as to the care of these. With single-rooted teeth, the time comes when these should be removed, whether the roots have absorbed or not as the ends of these roots are sometimes diverted sideways and without extraction there is likely to be trouble.—*W. V. B. Ames, Chicago.*

Pathology:—One of the deplorable conditions existing among the profession is that they do not understand and follow pathological conditions; and when they do find a diseased condition they apply a remedy that they are not familiar with, nor do they understand its chemical constituents; and therefore are not able to work intelligently. It is not alone the bacteria that we are to overcome, but we have many gases, such as sulphureted hydrogen, when the putrescence and putrefaction takes place, and ptomaine poison and nitrogenous matter. I think it would be well for us to study carefully our pathological conditions when presented, and then apply the proper remedy. Also that we should be familiar with the constituents we are using for the purpose of eradicating disease.—*W. C. Wendel, Milwaukee, Wis.*

Operating on the Antrum:—The operation that has proven most successful with men that I have been associated with has been that of an entrance just posterior to the canine fossa; making an opening large enough for the entrance of a small electric light bulb that will enable you to examine the entire antrum, so that if it may have in it foreign material, such as polypi or any malignant growth, it can be removed. The packing of that with some gauze should be, in all probability, the only treatment that the antrum should receive at that time. On the following day the antrum should be washed out, and free drainage established, with a normal salt solution. I think this method, if a pulpless tooth is the cause, will give almost immediate relief, and will effect a permanent cure; and I prefer it by far to the method of entering through the nares.—*C. E. Bentley, Chicago.*

Treatment of Pyorrhea:—My treatment is usually a ten per cent solution of sulphocarbolate of zinc in cinnamon water. The solution is colored with tincture of cudbear. Give the patient a bottle of this to massage the gums between treatments. Inject the solution into the pocket with a good syringe having a long slender needle that will reach the bottom of any pocket. The Sub "Q" syringe with a gold needle is very good. Carry the point as deeply as possible and flood the pocket and use force enough to carry the fluid to all parts, then quickly massage the gums. Care should be given not to force the solution too hard into the pockets, as that will cause pain. After the injection flood the mouth with warm water from the water syringe. This treatment follows the removal of deposits from the roots of the teeth and necrosed bone if any.—*W. H. Whitslar, Cleveland, Ohio.*

Extracting Teeth for Regulating:—So far as the relations of the teeth to each other are concerned no dental malposition should be taken as a basis for extraction. The only excuse for the extraction of saveable teeth, must be that it is inexpedient or impossible to correct their positions without producing facial protrusion. In nearly all locally caused malpositions of the teeth in immature arches, the final development of the jaws and general growth and enlargement of the features, demand all of the teeth and their sustaining alveolar arches to harmonize facial relations. To remove one or more of them under these conditions will inevitably produce its effect. The effect upon normal arches that would be otherwise harmonious in size and relations, is invariably an abnormal contraction of the arch so affected and the ultimate forcing of the teeth of the opposing arch into malalignment and malocclusion, which frequently results in a facial deformity.—*C. S. Case, Chicago.*

Treatment After the Removal of a Pulp:—I have had more pericementitis following the removal of pulps by cocaine and pressure than I did when I used arsenic. But anyway when you remove a pulp, either by means of arsenic or cocaine, you have irritated more or less the tissue at the apical space, and you need an anodyne there. Phenol is not bad of itself, but the much best preparation is as follows:

℞	Menthol	ʒjss
	Thymol	ʒijss
	Phenolis	℥j — M

Sig.—Use as directed.

The constituents of this preparation are penetrating drugs, and care must be taken to use only a small quantity. If asepsis has been maintained in removing the pulp, all that is necessary is to place dry cotton in the canal and a small pledget dipped into this remedy into the pulp chamber.—*J. P. Buckley, Chicago.*

Cleaning Out Root Canals:—When you believe that you have removed the pulp entire at the first sitting and think that you are ready to fill the root canal, stop and think twice before you proceed. There is still debris left somewhere in that canal seventy-five times out of a hundred and you will be surprised to see some of the pulp tissue entangled on your broach at a second sitting. This is true in particular, where we have tortuous root canals of upper and lower molars. For various pathological reasons we are not justified in filling a root canal immediately after the pulp has been removed or at the same sitting. But should the conditions warrant such procedure, place the rubber dam in position, and after removing all the pulp that is possible, a saturated solution of bicarbonate of soda may be forced into the canal with a dropper (the Glyco Thymoline applicator suggests efficiency for this purpose) and with a number 5 Donaldson broach carefully introduced into the canal, the remnants of the pulp tissue may be coaxed out. Follow by washing out the canal with a syringe containing distilled water, but do not remove the rubber dam. Use the saliva ejector, dehydrate, sterilize and fill. You have thus immunized that root against invasion of new micro-organisms and have kept your conscience clear by rendering the patient an honest service for which a proper remuneration will invariably follow.—*Bernard Bramm, Chicago.*

MEMORANDA

NORTHERN ILLINOIS DENTAL SOCIETY.

The twentieth annual meeting of the Northern Illinois Dental Society will be held at Rockford Oct. 16 and 17, 1907. Mark the date in your appointment book and visit a fine town and a first-class dental society. A. M. Harrison, Secretary, Rockford, Ill.

A DENTIST WANTED.

Here is an appeal taken from the Juda (Wis.) *Home News*, which ought to be investigated by some young man looking for an opening:

Juda in Need of Dentist.

Juda is in need of a dentist, and this now seems to be the "war cry" of its business men and the people in general. We have been told that there is scarcely a day passes but what one or more people of this village and locality are passengers to near-by cities for the purpose of having dental work done, and there are many more who remain at home and see their teeth go to decay, while if there was a dentist located here they would be only too glad to secure his services. Here is the location, now for the man.

THE NATIONAL DENTAL ASSOCIATION.

The National Dental Association at its eleventh annual session, Minneapolis, July 31, elected the following officers for the ensuing year: President, Wm. Carr, New York city; vice-president for the east, Wilbur F. Litch, Philadelphia, Pa.; vice-president for the south, J. P. Gray, Nashville, Tenn.;

vice-president for the west, Alfred Owre, Minneapolis, Minn.; corresponding secretary, Burton Lee Thorpe, St. Louis, Mo.; recording secretary, Charles S. Butler, Buffalo, N. Y.; treasurer. A. S. Melendy, Knoxville, Tenn. Executive committee, new members, L. Meisenburger, Buffalo, N. Y.; F. B. Kremer, Minneapolis, Minn.; M. F. Finley, Washington, D. C. Executive council, H. J. Burkhart, chairman, Batavia, N. Y.; J. Y. Crawford, Nashville, Tenn.; A. H. Peck, Chicago, Ill.; F. O. Hetrick, Ottawa, Kan.; B. Holly Smith, Baltimore, Md. Next place of meeting, Boston, 1908.

RECENT PATENTS OF INTEREST TO DENTISTS.

858,193. Dental chair, Logan L. Mallard, Atlanta, Ga.
858,827. Securing dowel-pins in artificial teeth, Joseph Ramsperger, York, Pa.
858,828. Artificial tooth, Joseph Ramsperger, York, Pa.
858,914. Dental mallet, George H. Shannon, Cambridge, N. Y.
859,335. Fastening pins in artificial teeth, Joseph Ramsperger, York, Pa.
860,435. Tooth-brush, Ted H. Bangs, Albuquerque, N. Mex. Ter.
860,527. Tooth-brush, James A. Cochrane, Cincinnati, Iowa.
860,394. Revolving tooth-brush, Nathan Levin, St. Louis, Mo.
860,555. Dental syringe attachment, Wm. C. Middaugh, Easton, Pa.
860,107. Tooth-brush, Theodore Reminger, Tiffin, Ohio.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

SURGICAL CLINIC OF THE JAMESTOWN DENTAL CONVENTION, NORFOLK, VA., SEPT. 10 TO 12, 1907.

The following gentlemen will give surgical clinics at Jamestown dental convention: Dr. Trueman Brophy, Chicago, Ill.; Dr. M. I. Schamberg, New York, N. Y.; Dr. W. J. Roe, Philadelphia, Pa.; Dr. V. P. Blair, St. Louis, Mo.; Dr. W. A. Bryan, Nashville, Tenn.; Dr. B. G. Copeland, Birmingham, Ala.; Dr. Wm. T. Nicolson, Atlanta, Ga.; Dr. Fred W. Moorehead, Chicago, Ill.; Dr. Randolph Winslow, Baltimore, Md. Dr. Schamberg will also give an exhibition of the X-ray for making diagnosis and a clinic with the X-ray showing its diagnostic value in oral surgery. These operations will be performed in the operating rooms of the Norfolk Protestant Hospital, where patients will be cared for following the operation. It is expected that patients will be furnished all operators, as a committee has been appointed in Norfolk and surrounding towns for this purpose.

L. M. Cowardin,
Chairman Surgical Clinic.

407 East Main Street, Richmond, Va.

ILLINOIS BOARD OF DENTAL EXAMINERS.

The annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the state of Illinois will be held in Chicago, at the College of Dentistry of the University of Illinois, northwest corner of Honore and Harrison streets, beginning Monday, November 4, 1907, at 9 a. m.

Applicants must be in possession of the following requirements in order to be eligible to take the examination: (1) Any person who has been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years just prior to application; or (2) is a graduate of and has a diploma from the faculty of a reputable dental college, school or dental department of a reputable university; or (3) is a graduate of and has a diploma from the faculty of a reputable medical college or medical department of a reputable university, and possesses the necessary qualifications prescribed by the board.

Candidates will be furnished with proper blanks and such other information as is necessary, on application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The examination fee of twenty ($20) dollars, with the additional fee of five ($5) dollars for a license, must accompany the application.

Address all communications to

J. G. Reid, Secretary,
1204 Trude Building, Chicago, Ill.

AMENDMENT TO SECTION 401 PENAL CODE STATE OF NEW YORK.

Section 401 of the penal code has been amended so as to read as follows:

Any person, who, in putting up any drug, medicine, or food or preparation used in medical practice, or making up any prescription, or filling any order for drugs, medicines, food or preparation, puts any untrue label, stamp or other designation of contents upon any box, bottle or other package containing a drug, medicine, food or preparation used in medical practice, or substitutes or dispenses a different article for or in lieu of any article prescribed, ordered or demanded, or puts up a greater or less quantity of any ingredient specified in any such prescription, order or demand than that prescribed, ordered or demanded, or otherwise deviates from the terms of the prescription, order or demand by substituting one drug for another, is guilty of a misdemeanor; provided, however, that, except in the case of physicians' prescriptions, nothing herein contained shall be deemed or construed to prevent or impair or in any manner affect the right of an apothecary, druggist, pharmacist or other person to recommend the purchase of an article other than that ordered, required or demanded, but of a similar nature, or to sell such other article in place or in lieu of an article ordered, required or demanded, with the knowledge and consent of the purchaser. Upon a second conviction for a violation of this section the offender must be sentenced to imprisonment, for a term of not less than ten days nor more than one year, and to the payment of a fine of not less than ten dollars nor more than five hundred dollars. The third conviction of a violation of any of the provisions of this section, in addition to rendering the offender liable to the penalty prescribed by law for a misdemeanor, shall forfeit any right which he may possess under the law of this state at the time of such conviction, to engage as proprietor, agent, employee or otherwise, in the business of an apothecary, pharmacist or druggist, or to compound, prepare or dispense prescriptions or orders for drugs, medicines or foods or preparations used in medical practice; and the offender shall be by reason of such conviction disqualified from engaging in any such business as proprietor, agent, employee or otherwise, or compounding, preparing or dispensing medical prescriptions or orders for drugs, medicines or foods or preparations used in medical practice.

Section 402. This act shall not affect or impair any liability, penalty or punishment under the provisions of section 401 as the same existed prior to the time this act takes effect, but the same may be enforced, prosecuted or inflicted as fully and to the same extent as though this act had not been passed; and all actions, civil or criminal, instituted under or by virtue of said section as the same existed prior to the passage of this act, and pending immediately prior to the taking effect hereof, may be prosecuted and defended to final effect in the same manner as though this act had not been passed.

Section 403. This act shall take effect September first, nineteen hundred and seven.

JAMESTOWN DENTAL CONVENTION.

Revised program for the Jameston dental convention meeting, to be held in convention hall, exposition grounds, Norfolk, Va., Sept. 10, 11, 12, 1907.

Officers.

Honorary president, J. Y. Crawford, Nashville, Tenn.; president, V. E. Turner, Raleigh, N. C.; first vice-president, B. Holly Smith, Baltimore, Md.; secretary-general, George S. Keesee, Richmond, Va.; treasurer, Mark F. Finley, Washington, D. C.

Program.

Tuesday, Sept. 10, 1907.—9:30 a. m., meeting called to order by Dr. Burton Lee Thorpe, St. Louis, chairman committee on organization. Invocation, Rev. Dr. C. L. Bane, pastor Memorial M. E. church, Norfolk, Va. Address of welcome, Hon. Harry St. George Tucker, president Jamestown Exposition Company. Address of welcome, Dr. Joseph W. Eggleston, Richmond, Va., in behalf of the profession of Virginia. Address of welcome, Dr. Edward Eggleston, Richmond, president Virginia State Dental Association. Address of welcome, Dr. W. G. Mason, Tampa, Fla., president southern branch N. D. A. Address of welcome, Dr. J. Y. Crawford, Nashville, Tenn., in behalf of the profession of the South. Response to the addresses of welcome, Dr. J. D. Patterson, Kansas City, Mo. Address by the president, Dr. V. E. Turner, Raleigh, N. C.

Tuesday afternoon session, 2:30 p. m.—Clinics in convention hall, Dr. Clarence J. Grieves, chairman, Baltimore, Md.

Tuesday evening, Sept. 10, 8 p. m.—Smoker at Inside Inn, Dr. B. Holly Smith, chairman, Baltimore, Md.

Wednesday morning, Sept. 11, 9:30 a. m.—Illustrated lecture, Dr. F. T. Van Woert, Brooklyn, N. Y., "Is the Cemented Filling the Filling of the Future?" Discussion opened by Dr. Wm. K. Slater, Knoxville, Tenn.; Dr. Craig M. Work, Ottumwa, Iowa. Illustrated lecture, Dr. Charles L. Alexander, Charlotte, N. C., "Gold Inlays." Discussion opened by Dr. H. Herbert Johnson, Macon, Ga., and Dr. J. G. Fife, Dallas, Texas.

2:30 p. m.—Clinics in convention hall.

8 p. m.—Illustrated lecture, Dr. R. Ottolengui, New York city, "The Purposes and Accomplishments of Modern Orthodontia." Discussion opened by Dr. W. O. Talbot, New Orleans, La., and Dr. W. Morgan, Nashville, Tenn.

Thursday, 9:30 a. m.—Clinics in convention hall.

2:30 p. m.—Special clinical lecture and demonstration by Dr. Wm. H. Taggart, Chicago, "Cast Gold Inlays, Bridges and Plates." Discussion opened by Dr. J. H. Lorenz, Atlanta, Ga., and Dr. L. E. Custer, Dayton, Ohio. Adjournment.

8 p. m.—Entertainment given to members and guests of convention by Virginia State Dental Association, under the chairmanship of the society's president, Dr. Edward Eggleston. A cordial invitation is extended to all ethical dentists to become members and attend this meeting. All sessions are to be held in the convention hall at exposition grounds. Entrance to this hall is outside the grounds, thus saving admission fee to enter it; however, entrance to the grounds is possible without leaving the hall.

To expedite the work before the general sessions, all resolutions, motions and routine business must first be submitted to the committee on organization, who at the proper time will present it to the general body.

Committee on Organization.

Burton Lee Thorpe, chairman, 305 North Grand avenue, St. Louis, Mo.; Thomas P. Hinman, vice-chairman, Inman building, Atlanta, Ga.; F. W. Stiff, treasurer, 600 East Grace street, Richmond, Va.; R. H. Walker, Norfolk, Va.; J. E. Chace, Ocala, Fla.; Clarence J. Grieves, Park and Madison avenues, Baltimore, Md.

H. Wood Campbell, Secretary,
Suffolk, Va.

COLLEGE COMMENCEMENTS.

NEW ORLEANS COLLEGE OF DENTISTRY.

Graduates.—A. A. Aycock Jr., J. A. Buisson, I. W. Bush, R. C. Cailleteau, Geo. F. Carman, J. D. Carter, E. L. Demaree, W. L. Dillard, St. C. Duke, W. J. Givens, F. L. H. Guidroz, J. S. Huhner, G. J. Hullinghorst, H. A. Jeanmard, A. J. Legendre, J. F. Love, M. E. Ludwick, J. W. Miles, C. E. Mixer, E. R. Musso, G. M. Provosty, J. T. Reese, W. H. Smith, J. T. Webb, J. H. Wiley, R. A. Wilson, F. N. Winbery, T. J. Wingrave.

LOUISVILLE COLLEGE OF DENTISTRY.

Graduates.—J. F. Baird, R. L. Baker, J. J. Barnett, R. L. Beeler, G. C. Bentley, H. V. Black, J. R. Boone, C. H. Bryan, W. M. Casper, J. D. Coleman, I. M. Coogle, C. C. Cope, W. B. Corley, J. R. Davis, A. L. Fountaine, M. T. Fordyce, N. B. French, M. D. Gibbs, G. Hampton, J. L. Haworth, A. L. Hill, F. Hook, J. L. Hughes, W. Hynes, E. N. Johnsen, W. Johnson, B. H. Long, D. C. Long, B. B. Lowdenback, H. W. Lundell, P. O. Lucas, R. S. Mabbs, H. B. Maggard, L. Meade, O. S. Meredith, J. C. N. Moffatt, F. W. Monfort, W. E. Mullinix, W. S. Pemberton, C. G. Pritchard, A. D. Ratts, C. E. Richardson, H. E. Royalty R. S. Russ, G. C. Rutherford, J. L. Selden, I. B. Simpson, R. S. Simpson, E. W. Smith, A. J. Steele, I. S. Stephenson, C. Stone, O. O. Stone, J. F. Sullivan, G. M. Schumacher, R. A. Tate, A. B. Tate, D. W. P. Tarlton, G. W. Thompson, P. B. Trotter, H. C. Vincent, T. J. Welsh, B. L. Wilcoxson, C. L. Wunsch.

Obituary.

RESOLUTION PRESENTED BY HOFRAT N. S. JENKINS AND UNANIMOUSLY ADOPTED BY THE "W. D. MILLER DENTAL CLUB" AT A SPECIAL MEETING HELD AUGUST 6TH.

Whereas, Geheim Medicinalrat Professor Dr. Willoughby D. Miller, the great scientist and beloved friend for whom our club was named, has been removed by death; therefore,

Resolved, That in common with all the members of our profession, we deeply mourn our irreparable loss.

Resolved, That as we were united to him not only by the admiration and respect which his scientific work spontaneously evolved, but also by the ties of warm personal friendship, we hereby pledge ourselves to cherish forever the memory of his example, which shall inspire us to higher devotion to our profession, to broader charity, to nobler living and to deeper compassion toward suffering humanity, whom he served so well and so unselfishly.

Geo. O. Webster, President,
E. D. Barrows, Secretary.

Berlin, Germany, August 7th 1907.

THE

DENTAL REVIEW.

Vol. XXI. CHICAGO, OCTOBER, 1907. No. 10

THE REORGANIZATION OF THE STATE SOCIETY IN ACCORDANCE WITH THE ILLINOIS PLAN.*

BY ARTHUR D. BLACK, B. S., M. D., D. D. S., CHICAGO.

The ultimate and principal object for which a state dental society exists should be the betterment of the dental service rendered to the people of the state. Everything undertaken by the society, whether it be in the line of scientific work, influence for better education or for legislation, should always have this same end in view. There is a state dental organization in practically every state in the Union and most of these have a membership comprising about 10 per cent of the practitioners of their respective states. A fair knowledge of a few of these societies is sufficient to justify the statement that most of them have done and are doing good work. They are laboring for the advancement of all things as they effect dentistry, but we wish to consider today methods by which these organizations, and the Wisconsin society in particular, may be able to make their work more effective. We have noticed that our friends in the business world are not conducting their affairs today as they did a few years ago; our educational institutions are constantly changing their methods to fit new conditions; the medical profession has within the last decade thoroughly reorganized its society system. Shall a profession as energetic and progressive as the dental be satisfied to see such things going on without making an earnest effort to keep abreast of the times?

How may such an organization as this advance the public welfare? By the advancement of the dental profession in education, science and good fellowship, by advocating proper legislation and by the education of the people in matters pertaining to dentistry. I believe you will agree that the influence of your society in all of these will depend, first, on the character and quality of the men of which it is composed; second, on the number of these members. We will suppose that for some years you have had a membership of 10 per cent of the dentists of Wisconsin. This 10 per cent includes many of the better men of the state, those who are deeply interested in the profession and who are active in its advancement. These men are themselves great gainers by their society work, and their efforts have had a certain effect in advancing the general interests of the profession. Please remember that the other 90 per cent of the dentists of the state are not members of this society and are therefore doing little to promote those interests for which it exists; nor are they receiving much benefit from it. Probably more than half of this 90 per cent are men who would, if interested, make valuable members of this society. Would you not then be able to further the interests for which you stand more rapidly if you had a selected 50 per cent of the profession of this state as members?

---

*Read before the Wisconsin State Dental Society, June 18, 1906.

We decided a little more than two years ago to try the change in Illinois and the result has far surpassed our expectations. The character of the papers and clinics presented at our meeting in May last compared very favorably with those of previous years, notwithstanding the fact that nearly half of the program was presented by new members. I wish to impress you with the fact that we have not been working for numbers at the expense of the effectiveness of our work, yet I think we should expect to do a little less of advanced scientific work for a few years in exchange for a broader general development of our men. The most noticeable result of our work at this time is the very decided difference in the feeling of good fellowship that exists throughout the state. Everything is harmonious and the dentists of Illinois are standing up for each other for the mutual benefit of all.

Your committee has requested me to give a brief statement of the work that has been done in Illinois in the hope that it will be of some assistance to you in deciding whether or not you will undertake a similar reorganization. It will be my endeavor to give you a general idea of what has been done without going much into detail. We shall be pleased to furnish details to the proper officers or committee.

In 1904 we had about three thousand dentists in Illinois, four hundred of whom were nominally members of our state society, but less than three hundred of whom actually paid dues. In 1905 our society had about thirteen hundred members, all of whom paid dues, and this year, about fourteen hundred. The first work of our reorganization committee was to take stock of the material in our state. We endeavored to make up a full list of the dentists and at the same time to determine who were desirable for members and who were not. We used the dental directory as a basis and made up separate lists of the dentists of each county. At the same time we obtained by correspondance the list of members of every existing local and district society and each member was marked on the county lists. In order to check off as many unethical men as possible in the beginning we obtained through an advertising agency as complete a file as possible of the newspapers of the state and the dentists' advertisements were all cut out and classified, and the names of all whose advertisements were unethical were checked on the county lists. These lists were then mailed to selected men in each county with the request that they be gone over carefully and the desirable men indicated. By this means we secured fairly correct lists and eliminated most of the undesirable men before any letters were sent to the profession at large. After this had been done we were ready to begin the work of organization. The state was divided into thirty sections, varying in size from one to ten counties, according to the number of dentists and the transportation facilities. Committees were appointed in each of these sections and meetings for organization were held. A form of constitution had been previously prepared, so those adopted by all local societies were practically the same. Nothing was left undone to make these meetings interesting and to impress the men with the advantages of a close fellowship between the dentists of each community. Men from distant parts of the state were sent to address those present and to assist in the details of organizing. In many cases a majority of the practitioners of a section were present and joined at the meeting of organization.

The relation between the local and the state society is the most important feature of the plan. The local society is the portal of entrance to the state society; it passes on all applications for membership and may expel men residing within the territory over which it has jurisdiction. On the other hand each member of every local society is necessarily a member of the state society; the dues paid to the local secretary cover both, so a man can not belong to one and not the other. This gives a large central body composed of definite units, each of which cares for its own welfare and that of the organization in its territory. Aside from regular society work much may be accomplished by such an organization. Let me mention one instance; when our new dental law was apparently hopelessly pigeon-holed by a committee to which it had been referred and the efforts of our political friends had failed to get it reported out, the officers of each local society were requested by telegraph to get their members to write and wire their representatives and in less than forty-eight hours about a thousand letters and telegrams were sent in and our bill was promptly reported out.

The ultimate success of a state society so organized depends very largely upon the local societies of which it is composed. The local society should be of the greatest value in the development of men; the members should get more of practical value from the local than from the state organization. The members of these components are facing about the same problems, the same business conditions. These men meet and discuss both scientific and business topics at close range; there is a better understanding among them. The natural result of these meetings is the establishment of a feeling of good fellowship which is probably more important than all else, and will do more to elevate dentistry. The more considerate each man is in speaking to a patient of a brother practitioner, the higher opinion that patient will have of the dental profession; the better the practitioners of a community are acquainted, the more kindly will be their treatment of one another. Several of our local societies have paid special attention to the collection of accounts, keeping a list of "dead-beats," others have done excellent work in ridding their communities of illegal practitioners, others have discussed the question of prices with profit, etc. Another feature of our local society work has been the frequent exchange of visits by men of the various sections, and our state society pays the expenses of one man, selected by the local society, to read a paper before it each year. We are in this way developing a closer acquaintance among the men throughout the state and the feeling of good fellowship is broadening.

Should you decide to take up this work, I suggest that you make good fellowship the basis of your work. I believe failure or success depends primarily on this. If there is friction anywhere it must be eliminated. Every man should be willing to sacrifice some personal desire or feeling, if necessary, for the advancement of the cause, and those who cannot prosecute their part of the work without friction should refrain from taking an active part. If an organization is built up along the lines of harmony and good fellowship, all other matters will be easily taken care of as a natural result.

Let me warn you that the work of organization and the conduct of such a large society is quite a large proposition, and requires systematic business management. The active men of the state organization must keep in close and constant touch with the components. They must know what each is doing. If there is a lack of interest anywhere, action must be taken to stir things up. If a local officer is not doing his duty he must be impressed with the importance of his position and the necessity for action. Local membership committees must be constantly urged to look for recruits and the local secretaries must be energetic in the collection of dues. In Illinois this year the state society had in its treasury the dues of about twelve hundred members a month before the time of the annual meeting. We do not count a man a member any year until his dues are paid. We publish a little monthly bulletin which enables the officers and members of the various local societies to know what the others are doing. This stimulates a friendly rivalry and materially assists in keeping up the interest.

In closing let me call your attention to the possibilities of our having a large and truly representative national dental organization in the near future in case a considerable number of states adopt this plan. We should have a national association with from fifteen to twenty thousand members instead of a weak organization of a few hundred. Many states have either already begun or are considering the matter and from the letters we have received, we are led to believe that the next few years will bring about a wonderful change in the dental organizations of this country.

A PLEA FOR MORE CONSERVATIVE DENTISTRY.*

BY W. M. COOPER, D. D. S., FRANKFURT-ON-MAIN, GERMANY.

It was with much hesitation that I decided to use the word conservative in the title of my paper, for it is so often construed in such a way as to mean one who relies on the past, is opposed to everything that tends to break away from old traditions, is suspicious of all that is new, and has no hope for the future. I like better the definition which says, "One who is opposed to innovation and change in an extreme and unfavorable sense." That is the tendency today. We are apt to run to extremes. Dentistry is rapidly splitting up into specialties, and the natural result of such a division is the development of men with but one point of view. They see their particular line of work in nearly every case. This is unfortunate for both the profession and the public alike, if it is allowed to go too far. There are certain branches which can, and should be treated by men devoting their entire time to the work; but the active practitioner must keep himself free from fads and fancies, and be able to look at his cases from every side. It is the all round man who is doing the greatest good to the greatest number, for while he may not be as brilliant along certain lines as his specialist brother, he can, by his broader view, hold him in check, and prevent him from letting his specialty run away with him. The all round man needs help, too, of a very practical kind. Our literature is crowded with new ideas, new theories, new systems of practice, new instruments and appliances of every sort. The field is so large that it is impossible for the busy practitioner to cover the ground and prove for himself what is good and useful, and what is worthless and to be avoided. We, therefore, need the help of our brethren of the scientific and experimental turn of mind. He should be more careful of what he publishes. All new ideas should be thoroughly tested as to their practical value before they are given to the profession as useful measures. When I say tested, I do not mean applied to two or three favorable cases, but put through a series of trials that prove beyond doubt that the theory is correct and useful. So many men who would not willingly utter an untruth, or do another an injury, do both, by rushing into print with statements which a little more care and time and further research would have saved themselves and others much annoyance. Their interest and enthusiasm in their subject enables them to put it in such a brilliant light that the regular practitioner is dazzled and is induced to try some new fangled idea or appliance, that is often a waste of both his and his patient's time. It is not only the regular practitioner who suffers, for Professor Miller in his address before this society two years ago urged the members to weigh well what they published, as much of his valuable time is wasted in demonstrating away false theories of men who rush into print with statements which are not supported by thorough investigation, and must be met and demonstrated as false or accepted. There is so much to be said on the side of conservatism, both in the practical and theoretical sides of dentistry, that I will not attempt to cover the ground. We see every day the abuses that are perpetrated on the unsuspecting public. Improperly prepared cavities, fillings slovenly made and left unpolished, roots carelessly filled, and often left in a filthy septic condition, ill fitting bridges and dentures, crowns that are a disgrace, and mouths so mutilated by faulty extractions that, if such villainy were practiced by a surgeon, he would be locked up for malpractice. Happily for a very large portion of the public, the members of this society have set such a high standard for themselves and their fellow practitioners, and so thoroughly appreciate their obligation to their patients, that much is being done each day along the lines of honest, conservative dentistry, to elevate our profession and bring it the recognition it deserves. But there is one fault that we are rather prone to commit, and of which I wish particularly to speak, viz.: The abuse of the inlay. I do not think any one present can appreciate and admire a properly made inlay more than I, myself, for I have suffered many failures and hard bumps in this line of work, and have been the unhappy witness of the failures of others. I am convinced that many of my failures need not have occurred, that it was not the fault of the material, but of my application. From reading the enthusiastic articles that continually appear in our journals, I led myself to believe that the inlay could and would do all that the carefully anchored, hand malleted, gold filling has done in the past, and will continue to do in the future. Before realizing the danger of this line of work, I had drifted farther and farther away from the old lines, and was cutting right and left, to get the proper room and anchorage. And herein lies the grave danger of the over-developed inlay specialist. His interest in his work leads him to sacrifice more tooth structure than Professor Black ever dreamed of in his "Extention for Prevention." When we are led to sacrifice more tooth substance in the construction of an inlay than is required for the insertion of a proper gold filling, then we leave legitimate conservative dentistry and wander on very dangerous ground. Even in such cases, where the inlay is indicated for artistic reasons, we run considerable risk, often causing our patients extreme pain, and we encroach on the pulp, which in time is sure to give us trouble in one way or another. Another point I have observed, that the inlay which is obliged to stand the stress of mastication requires more care and attention after insertion than a gold filling; being of so hard a substance, it does not wear off, as do the natural teeth and gold, and must be tested from time to time with articulating paper, and polished to the normal contour, or there comes a time when they are doing more than their share in carrying the stress of mastication, and displacement or breakage is the result. This polishing process is annoying both to the patient and operator, and when a disaster does occur it is a black mark for the inlay, and often for the dentist. These failures need not occur if the inlay is used in its proper place, and the gold filling allowed to carry the great stress of mastication, for which it is so well adapted. The practictioner of today is able to accomplish what was not dreamed of a generation ago, but the older generation has left us examples of gold work that few operators now would attempt, and none could excel. So many beautiful results may be accomplished with porcelain that to my mind it is wrong to make a false use of it; with the improved furnaces and electric appliances, the great variety of colors and shades, make it possible to imitate nature so thoroughly as to defy detection. Why not, then, be satisfied with the use of this beautiful material in such places as its artistic value indicates, and leave as far as possible the hard wear and tear of mastication to the old reliable gold filling. Let us not abuse porcelain, but use it in legitimate, conservative dentistry.

---

*Read before the American Dental Society of Europe, at Rome, March, 1907.

VACCINATION, A POSSIBLE CAUSE OF DENTAL DEGENERACY.*

BY W. MITCHELL, D. D. S., LONDON.

[In the absence of Dr. W. Mitchell the paper was read by his brother, Dr. L. J. Mitchell.]

Mr. President, Ladies and Gentlemen—I am well aware of the fact that in promoting discussion upon a subject, the practice of the principles of which has been such a source of revenue to the medical profession, I am treading upon dangerous ground. That, however, should not be allowed to stand in the way of our looking into the subject, and finding out, if possible, if we have not in vaccination a prime factor in producing phenomena we have long been pleased to call dental degeneracy.

During the experience of many of those present our profession has been called upon to inquire into, and investigate, many theories in connection with dental caries, some of which possess attributes which have commanded our attention, and merited further and more careful consideration from the crucial standpoint of intelligent everyday practice. I would emphasize this point, owing to the periodic *ipse dixit* of armchair philosophers, and laboratory experimenters, who have so little in common with men whose life's work has been made up of, and devoted to, evolving the satisfactory practical application of ways and means for the amelioration of human suffering, work which can but have its most perfect development and fruition when carried on in connection with conditions found only in nature's most perfect laboratory, *i. e.,* the vital human economy.

It has long been recognized as a strong probability that parents suffering from constitutional diseases manifesting exanthematous characteristics, at the time of conception, or during pregnancy, may have no small influence in determining the integrity of the dentition of the child. Professor Black has assured us that there is no practical difference in the quality of teeth, that all teeth possess a very rhythmical average of their inorganic constituents, as well as organic matrix substance, which go to make up their perfected organization. We know equally well—it is beyond the possibility of intelligent denial—that all teeth are not alike, inasmuch that they possess different physical qualities, both as regards their resistance to cleavage, and their proneness to decay, as well as to their behavior subsequent to dental treatment, all of which leads me to believe Professor Black's deductions are based upon physical tests only, which unfortunately can never include the *vis-vitae,* that indescribable something of the subject, which is the determining factor for health, or its perversion, in all vital processes. It was a member of this society, Dr. W. E. Royce, who demonstrated that medicines administered to the mother during pregnancy will produce dental aberration in the offspring, heretofore associated chiefly with pathological conditions of dermal and subjacent tissues. This established fact may have no small influence upon the production of the so-called "Hutchinson teeth," which are supposed to be the result of a disease, the recognized remedy for which will produce similar perversion of dental development in the offspring when administered to the mother.

---

*Read before the American Dental Society of Europe, Rome, March, 1907.

It is an interesting historical coincidence that vaccination and dentistry—as we understand the latter—made their advent practically about the same time, *i. e.,* late in the pre-Victorian era, about the end of the eighteenth century. It is equally interesting to note that investigations carried on in connection with exhumations and collections of ancient human remains reveal almost a pronounced absence of evidence of hypoplasia of the dental organs, as compared with the more recent rapidly increasing occurrence of that condition, before the ravages of which the medical and dental professions alike are well nigh helpless.

The history and development of vaccination may be found in any good encyclopaedia, either general or medical, so I will not detain you by detailing it here. Suffice it to say opinions are divided as to the real benefit it confers.

That more satisfactory results have been attained since bovine has taken the place of humanized lymph there can be no doubt, as the lower animal is possible of better supervision as to its ancestry and surroundings than was the child from whom the lymph was formerly procured. It would appear that the alleged value of vaccination in promoting immunity from smallpox is dependent upon the stage of development of the pustule upon the animal selected as the vaccinifer; as the results to the subject inoculated, as regards the consecutive stages of the pathological sequelae, which may be anything from the normal healing of the scarified surface, to vaccinal syphilitic inoculation itself, it is easy to see if the exact time of procuring the lymph be anticipated or exceeded, the intended beneficial results may be absolutely perverted, and a possible benefit prove a curse of the most disastrous nature.

With the foregoing points before us, we may now proceed to a further consideration of the subject.

It is now generally accepted that disturbing systemic conditions in the mother during gestation may, and not infrequently do, leave their perverting impress upon the child. Such being the case, is not it possible for vitiated conditions in the child to manifest degenerate sequelae as regards its dentition, which may be said to be in almost a parallel incubative condition? I consider the proposition a not unreasonable one.

Vaccination is now compulsory in most civilized countries, exemption in some cases being permissible upon a declaration by the parents of having a conscientious objection to the inoculation of the child. The time of inoculation in England must be prior to four months from the birth of the child. In Scotland it is six months. At the present time inoculation from arm to arm is tabooed, and properly so, for who now would defend a practice fraught with so many terrible possibilities?

Strictly speaking, vaccination is without doubt one form of deliberate blood-poisoning, with the intention of averting another. It is done at a time supposedly determined by the health of the child. In a healthy, normal child the circulation is very active, in order to carry on the various nutritive processes incidental to the rapid development which is in progress during these early months of its existence. This force is equally competent to disseminate disturbing influences, or disease itself, and owing to the extreme activity of assimilative capacity at this period, the diffusion of morbid products is greatly facilitated, and practically insures the full effect of their banal influence; especially is this so when we consider the fact that at this time the selective and assimilative forces are really in advance of the excretory, while the combative, or resistive forces, in so far as disease is concerned, are at their lowest ebb, as compared with any other period of the child's history. It is thus easy to understand how sensitive the infantile economy must be to any influences which may cause it to gravitate one side or the other from its normal physiological rythm.

The disturbing effects of vaccination, as have been shown, may vary from practically nil to even dissolution itself. This being the case, and with an ever preponderating tendency toward a general physical perversion, it requires but slight reasoning capacity to see the possibility of great disturbance in connection with dental development, governed as it is in its various complex processes by the most acute and sensitive portion of the entire nervous system. Presuming gestation to have been completed without any serious complications arising so far as the health of the mother is concerned, and that she has not been dosed with grey powders, the child is born practically normal. The temporary teeth at birth have completed their enamel development, without any perversion of nutrition: we here find a satisfactory explanation of the marked absence of hypoplagic conditions in the temporary dentition. Within four or six months the child is vaccinated. This operation is imperative at a time when the enamel organs of the permanent teeth are actually engaged developing their approximately inorganic successors. At this time a foreign, abnormal or pathological medium—as you prefer—is introduced into the child's system, the vital force of which has its equilibrium disturbed to repell the invader, and during this struggle the rythm of development of the entire system may be seriously perverted. This being the case, what would be more natural than that at this time and under these conditions the most elaborate and specializing process would be most likely to be the one most seriously affected? That this is so there can be but little doubt.

It is only on extremely rare occasions we find any evidence of hypoplasia of the temporary teeth, and when we do find it it does not present that special defined appearance so common in the permanent teeth, with which we are all so familiar. In the case of the temporary teeth, we find the whole coronal portion of the enamel involved, whereas in the permanent teeth we find, as a rule, a well defined horizontal limit at the point of arrest and re-establishment of development, and where small pits, or even holes, appear these are along the horizontal line of development, clearly showing that at a well defined period a cataclysmic physical condition eventuated, developed, and subsided, leaving its indelible trace upon the points, or approximately so, of the teeth whose enamel was in process of formation at that time.

As the compulsory period during which vaccination must be performed has been shown to be during the first four to six months of infantile existence, and during this period we know the enamel organs of the permanent teeth to be engaged in their specializing process of forming the enamel, especially of the cusps of the first permanent molars, and as these are the teeth most affected by this hypoplastic condition, is not it reasonable to suppose we have found a probable cause and its effect, *i. e.,* if our premises have been correct?

Erysipelas claims more victims during infantile life than does any other traumatic disease. The symptoms of erysipelas are principally objective, attacking as it does the dermal and peripheral tissues, as well as the subjacent ones; may we not then from these facts trace a correlation and consecutiveness of pathological sequels well worth our while considering?

That so many children die of erysipelas during their first year, and as erysipelas is very frequently a traumatic concomitant, attacking and seriously affecting tissues analogous to those under consideration, and even though the child may be considered to have come fairly well through the sequelae of vaccination, is not it possible that the impression made upon the system at that time may be continued so as to involve the central and lateral incisors, and also the cuspids, producing the characteristic grooves in the enamel near or at the points of those teeth, with which we are, alas, only too familiar?

As erysipelas is such a common sequal to vaccination, and as so many fatalities ensue, is not it reasonable to suppose that a great many who recover from it suffer permanently from the shock it has been to their dental development, and all through life retain symptoms of a weakened dental condition, which dentistry at best can only ameliorate, but not cure?

Some time ago I saw in a periodical the late Professor Huxley suspected a relationship between vaccination and perverted dentition, but I am unable to find when or where he voiced this belief.

That there is something worthy of our investigation and consideration in connection with the subject I have presented to you I feel assured, and I trust someone more able than myself will pursue the subject further and enrich our knowledge in connection therewith.

SOME OBSTACLES IN CROWN AND BRIDGE WORK.*

BY N. S. JENKINS, D. D. S., DRESDEN, GERMANY.

Porcelain crown and bridge work has come to assume such great importance and may now be accomplished to such great advantage that it is well to review the fundamental basis upon which such work must rest, since, if the foundation is firm, there seems to be no limit to its usefulness.

All such work rests upon teeth or decrowned roots and it is the task of the aspiring operator to make the foundation secure that his superstructure may be enduring.

The treatment of roots is by far the most complicated factor. For either they have lost the pulp by the ravages of decay, or else it has been extirpated by man's device. In either case to make such a root serviceable requires no small amount of knowledge and technical adroitness. Sometimes a deeply imbedded root, for years the prey of disease, can, if restored to health, become the very keystone of a complicated bridge, and in such a case no amount of care or trouble is excessive to obtain so desirable a result.

I have in mind a recent case where a lower bicuspid root, fairly firm in spite of year long abscess, required a month's treatment before it could be made sound enough to serve the purpose, but it was time well spent since the patient could then be relieved of a partial lower plate. Younger has shown us how loose roots can be tightened through being securely ligated in position, during, and for a certain time after, treatment. The successful bridge worker has often been surprised at the great improvement in decrepit roots which he has ventured to retain in a spirit of desperation as infirm adjuncts to the support of a bridge. Of course judgment must be tempered with discretion, but, under intelligent treatment, great is the recuperative power of nature.

The septic contents of the tubuli of a diseased root must be brought into aseptic condition, but not alone that; the root must be so completely disinfected that when its point is closed and the crown or bridge set infection cannot supervene. In such a case gutta percha is not admissible. To remain in a healthy condition such a root must be not only hermetically sealed at the foramen, but it must have its pivot so completely sealed, that there can be no ingress of corrupting micro-organisms. This is not wholly practicable with gutta percha. In a healthy root, where a crown has been set with a thin layer of gutta percha, a slight leakage is a factor of little moment; but, in a root which has been saved, as by fire, not only the danger of fracture through swelling of the material may exist, for moisture causes in time all gutta percha to swell, but it is also impossible to keep any root free from the ingress of moisture except with cement, and also, in desperate cases, the strength imparted by cement is a factor of great importance.

---

*Read before the American Dental Society of Europe, at Rome, March, 1907.

When we come to devitalizing and extirpating a pulp we are often confronted by serious complications. Notwithstanding the great facility with which this may be accomplished in many cases, by cocain under pressure, there still remains a certain number of cases where the old method with arsenic is still indispensable; but, whatever the means taken to reduce sensation, the subsequent removal of the entire pulp is not always a simple matter. A pulp canal is often so attenuated toward the end of the root as to cause the pulp to tear some slight distance below the foramen and the remaining fine filament of pulp must still be completely removed or serious consequences may supervene. The delicate film of living tissue which often spreads to a microscopically fine web between the seemingly separated pulps in a bicuspid, nearly or quite to the apex, is a source of much trouble. The buccal roots of an upper and the anterior roots of a lower molar are not infrequently so obscure and so fine as to cause many an impatient operator erroneously to conclude that they have been obliterated by deposit of secondary dentine and to attribute the continued tenderness of the root to some mysterious constitutional disturbance. But if the whole pulp, to its finest remnants, has been completely removed under proper antiseptic conditions and the foramen securely closed that tooth or root should be as completely comfortable, and as capable of use, as when it possessed a living pulp. Indeed often it is more comfortable and useful without than with a vital pulp, for, in the former condition, there is no more sensation to sweet or salt or to heat and cold. But how is the pulp always to be completely removed? There are cases which puzzle the very elect. Some of the natural teeth which I will now pass around for inspection will recall to mind complications with which we are all familiar, but which often escape our memory in the rush of practice. Two fanged cuspids and lateral incisors, although happily rare, still exist. Flattened and crooked roots are more frequent but molars having five or six distinct pulps and foramens must be classed among the things which should not be. Since many years Ash & Sons in London have manufactured for me barbed broaches which are unequaled in fineness and which I have found of great value in removing attenuated filaments of pulp, but there are canals so fine that even these broaches cannot completely penetrate.

Here comes to our aid sodium dioxide of Kirk, or sodium potassium of Schreier, either of which accomplishes the important office of saponifying organic tissues. The tooth under treatment should be dried as completely as practicable and the agent carried gently into the canals. So soon as a little effect has been produced the resulting moisture should be removed by absorption (I beg to present some fine paper points which are admirable for this purpose) and the use of hot air, and then the process of saponification should be resumed until every vestige of organic or putrescent tissue has been removed. This process enables the patient operator to obtain a septic condition otherwise, in many instances, impossible, and makes resort to mummification unnecessary. But when a root has been so far prepared the enlargement of the pulp canal, to receive the post, often presents difficulties. Except with an X-ray picture one cannot always tell with certainty the direction or the thickness of a root and therefore the enlargement of the canal should be carefully proceeded with. Gently, and with a sensitive touch, the finest of the Beutelrock drills should be first employed until the foramen has been reached or a sufficient depth obtained. A small flexible Donaldson broach should be frequently used to show if the drill is keeping its proper direction, and, if any deviation is perceived, the drilling must be at once suspended, the canal carefully enlarged up to that point and then it will be usually possible to determine the cause of the deviation. To pierce through a root is a great and an inexcusable blunder. I am passing about some of the Beutelrock drills in case any of the members are not acquainted with them. They are slightly weaker near the handpiece so if a special strain comes they break there and not in the root. But after all this is completed how shall the foramen be closed? For my part I greatly prefer zinc oxychloride. It is not only, for a short but critical period, antiseptic, but it clings so closely to place as to be mechanically resistant, a fact of no small importance when a post covered with oxyphosphate cement is carried firmly into the canal. I will not enlarge upon the slight countersinking of the root for strengthening the cap and securing that it goes exactly into place, nor the good judgment necessary to carrying a band or partial band only to that shallow distance where support is obtained without misfit or danger of encroaching upon the attachment of the gum, or the supreme importance of having exact alloys of platinum iridium of 30 per cent iridium for posts 25 per cent for connecting wires and 10 and 20 per cent for caps and bands that the skeleton may be equally strong in every part: but I venture once more to assert that the construction of a perfect porcelain crown or bridge is now only a question of understanding the nature of the difficulties to be overcome, for, with the modern resources we have at our disposal, we may say with Napoleon, "Impossible is the adjective of fools."

ETHICS.*

BY C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO, ILL.

The most expressive definition of ethics that I have ever seen is embodied in four words: The science of morals. This has relation, of course, to the broad question of ethics, as it affects the entire human family, rather than with any special reference to professional ethics such as we are particularly called upon to deal with at this time. And yet it might be well to consider briefly the fundamentals of ethics as they affect us in every walk of life. A man cannot have dealings of any kind with his fellow man without the question of ethics entering into it. It is true that we hear little of ethics in commercial life, and yet if ethics is the science of morals it affects every transaction between human kind. To be dishonest in any relation of life is to be unethical.

The reason we hear the question of ethics emphasized in professional life more than in commercial life is because of the difference in the relationship of individuals in the two lines of effort. In trade the individual is dealing with commodities, with things, in professional pursuits, the dealing is with persons, and the stake at issue is often a human life. This increases the responsibility of the professional man and raises to a higher plane the ethical standards which should control his actions.

---

*Read before the Illinois State Dental Society, May, 1907.

In accordance therewith a code of ethics has been formulated more or less specifically outlining certain rules of conduct for the guidance of the professional man in his relationship with the public and with his fellow practitioner. The signing of this code is made the basis of membership in most of our dental societies, and it has been the observance or non-observance of the spirit and the letter of the code which has formed the chief distinction between professional and unprofessional practitioners.

The question is often raised as to the necessity or desirability of having a written code. Human nature is not yet perfect, and professional people are human. If the high ideals of our best moralists were made the basis of every-day conduct among the dentists practicing in a certain community, then there would be no necessity for a written code of ethics to govern the membership of any dental society organized in that community, but until men can with safety be placed upon their honor to do what is right they need rules to control them. If all men were broad enough in their vision and just enough in their attitude toward the rights of others there would be no need for the numerous laws on our statute books, and while the idea of restraining people may seem repellant to some minds, yet it is a necessary concomitant of existence. "Thus far and no farther" seems to be a very law of nature. If the most beautiful vine in the arbor grows beyond its bounds and encroaches on forbidden territory, it is clipped. If a domestic animal is turned out to pasture it is restrained by a fence. Within certain limits there is freedom, but beyond that the law is encountered, and if the laws are just those limits are always placed at a point where to go beyond would work injury either to one's self or to others.

No just law will restrain individuals against growth and development along worthy lines, and in respect of this it may be said that no dentist has ever been hampered in legitimate development by signing and observing the code of ethics. It is true that laws or rules formulated by human intelligence are sometimes defective in their phraseology or harsh in their measures. It is not always possible to predict with certainty the precise effect of the practical working of any law till it is tried, but our code has surely up to the present time served its purpose well. In the evolution of mankind toward higher ideals it is found that the laws which seem necessary and adequate at one period become grotesque and obsolete at another, and it is sometimes urged that dentistry has developed to a point where the old code is no longer in keeping with modern progress. Let us examine the code somewhat closely and see if it has outlived its usefulness or if we can better its provisions.

The first section of Article I. of the code says: "The dentist should be ever ready to respond to the reasonable wants of his patrons, and should fully recognize the obligations involved in his duties toward them. As, in many cases, they are unable to comprehend the operation or service performed, or to correctly estimate its value, the practitioner must be guided by his own sense of right, in treating the case as his superior knowledge dictates. His manner should be gentle and sympathetic, and yet sufficiently firm to enable him to secure the best results of his skill. He should gain the confidence of his patrons, not alone by the skillful performance of difficult operations, but also by attending carefully and conscientiously to the simpler cases committed to his care."

It may seem true that all of this goes without saying in the mind of any reputable man, and that if a man is in his heart not reputable the mere signing of such a section would in no way influence his practice or bind him in its provisions. The same may be said of Section 2, which says: "The dentist, without being obtrusive or pedantic, should impart such information to his patients as his opportunities afford him in regard to the causes and nature of the diseases in the teeth, or adjacent parts, which he may be called upon to treat; and should explain to them the importance of availing themselves of such timely preventives or remedies as he may deem necessary to their welfare. He should also communicate such general information as shall enable them to exercise an intelligent appreciation of what the profession aims to accomplish."

This in brief is an admonition to the dentist to educate patients to a proper appreciation of dental service, and has really no specific obligation upon the man who signs it.

Section 3 reads: "The dentist should be temperate in all things, keeping both mind and body in the best possible health, that his patients may have the benefit of that clearness of judgment and skill which they have a right to expect." Here is something that has a very significant meaning and touches on a phase of professional responsibility that is not often enough considered by dentists. It is not likely that 999 men out of every 1,000 who join dental societies and sign the code ever consider for a moment that they are obligating themselves not to dissipate in any way or impair their health so as to handicap themselves in their work. And yet this is a phase of professional life which has often impressed me. Entirely aside from the moral obligation to one's family or to one's self, there is with the dentist or physician the strongest reason and the most urgent demand that he shall not jeopardize the quality of his service to humanity by impairing his mental and physical functions through excesses of any kind. No dentist has any moral right to attempt to operate for his patients if he is intoxicated or if he is accustomed to becoming intoxicated frequently. When a man chooses a profession he becomes obligated in a different sense from anything that binds him in trade.

Section I. of Article II. reads: "Every member of the dental profession is bound, as such, to maintain the honor and integrity of the profession. To this end he should himself be upright and courteous in his intercourse with the public and his brethren in the profession."

This is more general than specific regarding one's duty, and from its tenor might well have been included in Article I. The entire code up to this point smacks of sermonizing. It is the kind of teaching which one might expect to be given a class of young men entering a profession, and yet who were not supposed to understand perfectly the distinctions between professionalism and commercialism. In short, it is precisely what is taught daily in our dental schools throughout the entire course. It is perfectly proper teaching and can do no harm, though as a specific code it is superfluous—except in two particulars. At the time it was written it was necessary and proper, from the fact that most men joining societies in those days had not had a college training and needed some instruction as to a correct basis for professional conduct, and in another particular it is desirable even now as a constant reminder of duty to those who on going out to practice and coming in contact with commercial ideas in their every day relations are too frequently inclined to lose sight of professional distinctions and obligations. Viewed in this light, the sections just quoted are desirable if not necessary, and it might be better for our members if they read them oftener. Sections 2, 3 and 4 of Article II are more specific in their provisions, and really contain the gist of the regulations supposed to be binding on our members. They read as follows:

"It is unprofessional to resort to public advertisements, such as cards, hand bills, posters or signs, calling attention to peculiar styles of work, price for services, special modes of operating, or to claim superiority over neighboring practitioners; to publish reports of cases, or certificates in the public prints; to go from house to house soliciting or performing operations; to circulate or recommend nostrums, or to perform any other similar acts. But nothing in this section shall be so construed as to imply that it is unprofessional for dentists to announce in the public prints, or by card, simply their names, occupation, and place of business; or in the same manner to announce their removal, absence from, or return to business; or to issue to their patients appointment cards, with a fee bill for professional services thereon.

"The dentist, when applied to for merely advice or temporary relief, by the patient of a reputable practitioner whose services at that time he is unable to procure, should guard against disparaging the family dentist by hints, inquiries, or any other means calculated to weaken the patient's confidence in him. At the same time the dentist should not, from too high a sense of professional courtesy to his neighboring practitioner, allow the interest of persons so applying for counsel or service to be jeopardized.

"And it shall be regarded as unprofessional to warrant operations or work as an inducement to patronage."

With men of truly ethical tendencies there is no hardship in obeying these rules. In fact many of our members live so far above the prescribed requirements of this part of the code that the spirit of their professional conduct transcends the written letter of the code to an extent which leaves no comparison. On the other hand there are men of different tendencies, some of whom are very desirous of being known as members of dental societies on account of the prestige which such a membership is supposed to carry, who do not scruple to sail as near the line of the letter of the code as their ingenuity can plan, but who in their hearts have little respect for professional spirit and no more love for the code than the devil has for holy water. Such men are very unfortunate. They eventually gain the disrespect of the truly ethical man and the undisguised contempt of the out and out quack. I have often made the remark that I would sooner cope with an open handed devil any time than with a fawning pretender, and I believe that this is the feeling among most of humanity. Pretence is the most putrid sore on the body politic, and in professional life in particular it is wholly an abomination. In these days when human motives are scrutinized as they never were before, a man cannot afford to carry water on both shoulders and perfidy in his heart. The perfidy will come out in spite of him and besmirch his fair exterior before the world.

If men only knew it the easiest way to pursue a professional career is to so conduct their practice that the question of the code is never debatable. Ethics is broader in its meaning than any written code, and it should be the aim of every practitioner who values his peace of mind and the respect of his fellowmen to so conduct his affairs that in his own heart there is no self reproach.

It is true there are some men who seem not to be able to discriminate between what has the suspicion of being unprofessional and what is strictly professional. Their inherent tendencies and their early training have handicapped them for nice distinction, and they really have no place in professional life. And yet many of them are in the professions and there is no way of keeping them out. They fulfill the requirements for matriculation and graduation and no college or state board can legitimately exclude them. Even if it were possible to so legislate that the power of exclusion were placed in the hands of the men guarding the entrance to the professions to the extent of affecting those of doubtful professional propensities, it would be a most dangerous prerogative to put in force. No body of men can successfully predict what certain candidates will do after their entrance on practice. We must take the material we have and content ourselves with the effort to keep out those who are incompetent to practice, but we must not go far enough to reject on our own meagre judgment any appreciable number of men for temperamental reasons alone.

Rather we should aim to raise those within our ranks to the highest appreciation of the true ethical relations which should exist in professional life, and we can do this more by example and in our daily intercourse one with the other and with the public than by any other means. Let those who have the welfare of the profession at heart live such lives of probity and equity that the doubtful ones will irresistibly be drawn into a higher atmosphere of professional purity. Above all let our society members live up to the true spirit of the code to the end that the frequent contentions over violations of the letter of the code shall cease to be a factor in the conduct of our professional organizations.

SOME COMMON MISTAKES IN ORTHODONTIA.*

BY LLOYD S. LOURIE, D. D. S., CHICAGO.

In response to a request by the program committee for "something practical for the general practitioner," I wish to call attention to some mistaken ideas which I believe responsible for much of the dread and mistrust with which orthodontia treatments are regarded by both dentist and patient.

Probably the most serious of these mistakes is the failure to appreciate the necessity for early treatment.

In a large proportion of difficult cases of mal-occlusion, and consequent facial deformity, the most trying complications could have been avoided if assistance had been given as soon as it was evident that nature was failing in normal development. One of our ideals is preventive dentistry, and the profession is losing a grand opportunity in preventive orthodontia, as well as neglecting an important responsibility. I believe this matter is of vital interest, for whether or not you undertake the correction of mal-occlusion, you are still under obligation to properly supervise the development of normal dentition in your younger patients. Remember, checking mal-occlusion prevents a long train of consequent ills, such as caries, pyorrhea, etc.

It is not uncommon for parents to report that they have, for several years, been anxious to have their children treated, but several dentists, and possibly the family physician, have advised delay. Let us glance at a few of such cases and see if that advice has not been a mistake. In doing this I take the liberty of repeating some portions of an article which appeared in THE DENTAL REVIEW, May, 1904.

Teeth and faces of six patients were shown to illustrate a variety of complications and difficulties resulting from delay in time of treatment. Most of these are matters of common observation, but one of

---

*Read before the Illinois State Dental Society, May, 1907.

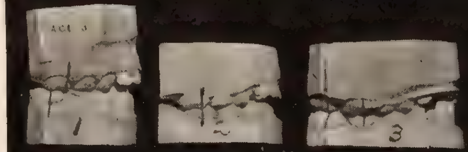


FIG 1

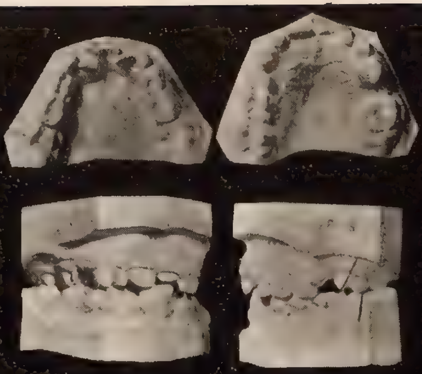


FIG 3

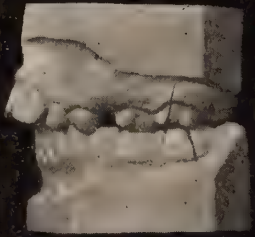


FIG 4

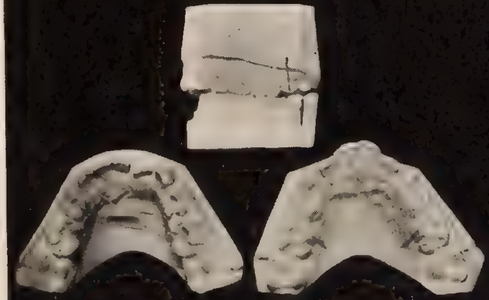


FIG 2

D

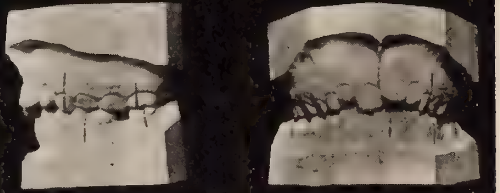


FIG 5

great importance is often overlooked, namely, thickened, shortened or otherwise deformed lips. These might have been avoided or corrected if treated early, while delay often makes restoration to normal an impossibility.

"It is not my intention to detract from the value of treatment for such cases or of even older patients, for there are few cases in which gratifying improvement may not be obtained. However, delay increases the difficulties of both treatment and retention, and it is obvious that there are many defects in development for which corrective treatment can never entirely compensate, and for that reason there is an urgent necessity for preventive precautions and early treatment. Is it not unreasonable, anyway, to allow nature to do the best she can against increasing difficulties, and then tear down and make over the results of her efforts, when development might progress along normal lines if given a little assistance as obstacles are encountered? At the time of the eruption of each tooth the tissues surrounding it are in the most favorable condition and readily accommodate themselves to any change in the position of the tooth, with a minimum of disturbance in their own development. Every tooth in mal-occlusion is a predisposing cause of mal-occlusion in those yet to be erupted, while with all of the erupted teeth in normal positions, those following are quite likely to erupt into normal occlusion also."

Granting the advisability of early "interference" or assistance, we may get some practical benefit by diagnosing some of the beginnings of mal-occlusion which are commonly neglected or overlooked.

Fig. 1. Age 5. No permanent teeth. The first view shows distal occlusion of entire lower arch, in which relation the permanent teeth would undoubtedly erupt. The second view shows normal mesio-distal relation established by slight lateral expansion of upper arch, not over one-eighth of an inch, taking only three weeks. Third view, one year later showing permanent molars erupting in normal mesio-distal relation.

Fig. 2. Age 6. Shows case like the preceding one, except that it has progressed further, and first permanent molars are erupting in mal-occlusion. It is plain that normal growth of bones is not taking place and permanent incisors must be much crowded; even now, there is no room at all for the lower right lateral. Immediate assistance is indicated to establish normal mesio-distal occlusion—also both arches should be expanded.

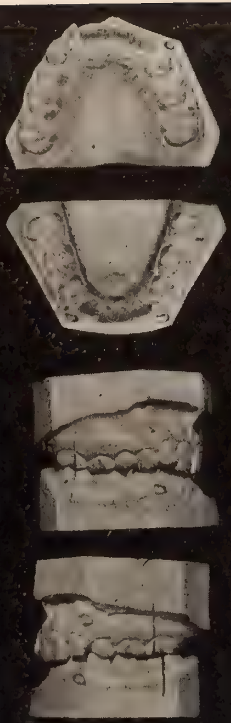


FIG 6

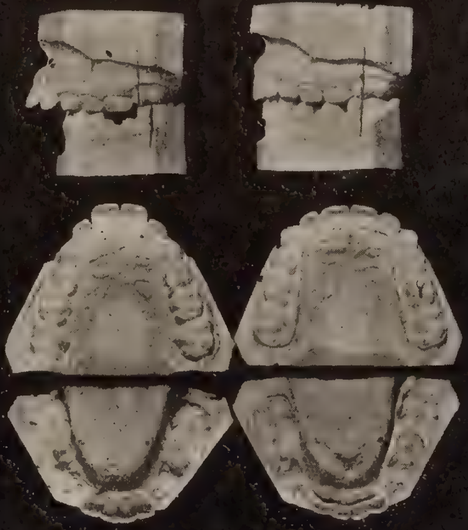


FIG 7

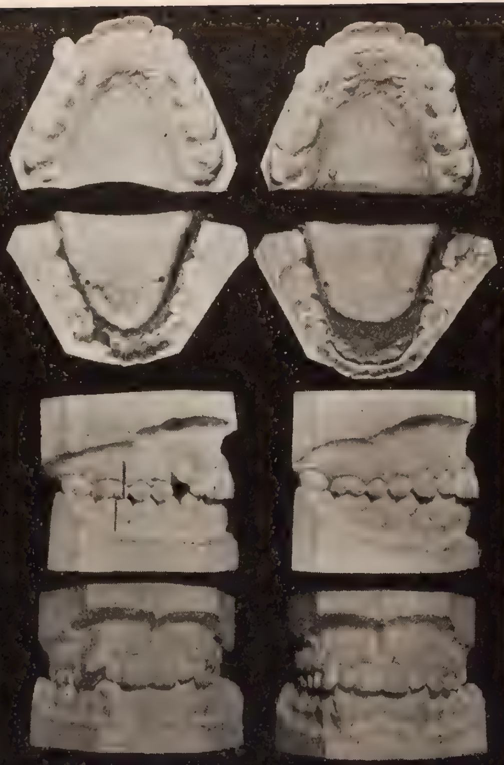


FIG 8

Fig. 3. Age 8. Shows probable course of incisors in previous case if not assisted. Note the recession of gum on prominent lower central, an injury that will probably never be repaired. Also a more serious condition in position of upper left first molar. This and following cases illustrate and emphasize the good points in Dr. Monroe's paper last year relative to the importance of care for the deciduous teeth, and first permanent molars. This should be restored to normal and both arches expanded.

Fig. 4. Age 8. Incisors need treatment at once, especially to avoid mal-formed lips. Upper left molar should be restored to normal to keep space for bicuspid and to insure normal occlusion mesiodistally of all succeeding teeth.

Fig. 5. Age 9. Another illustration of damage from loss of deciduous molars. In upper incisors defects are obvious, but also notice position of left side of lower arch. Both arches should be expanded and lower left side moved mesially.

Fig. 6. Age 10. A common cause of prominent cuspids. Apparently one lateral needing attention, but that is the least of the trouble—no room for three cuspids. The need for expansion of both arches should be clear if prominent permanent cuspids are to be avoided.

Unfortunately we have also to deal with more advanced cases and they bring us to another mistake in diagnosis—the common tendency being to contract, when in reality expansion is indicated. Much has been written on this subject recently, so but two illustrations will be given here.

Fig. 7. Age 10. To the average observer, protruding upper teeth. Really just as much retrusion of the lower jaw. Mesio-distal relation of arches most important consideration in such cases.

Fig. 8. Age 16. Right upper cuspid appears to be in greatest need of treatment, yet is nearer its normal position than incisors and bicuspids, as shown by illustrations. Width between cuspids really a trifle greater in finished positions.

Now, when we come to the actual operation of tooth movement there must be something radically wrong with common procedure when the idea prevails so universally that it is necessarily a "painful ordeal." So common is this notion that many patients, having made up their minds to be martyrs, think their teeth are not moving because there is no pain. Undoubtedly there has been, and is foundation for this belief, and I am convinced that there is a great deal of unnecessary pain. The dentist endeavors to comfort his patient with the assurance that "it is an indication that the teeth are moving." Probably true, but also an indication that something is wrong and probably they are moving too rapidly. It is a great mistake to be impatient for results, and especially at the start. Even aside from considering the patient's comfort, it is a shortsighted policy to set up a pathological condition of the peridental membrane, the agent upon which we depend for our physiological changes. Light pressure will often prove more effective than heavy pressure, and it is far better to take even weeks in getting movements under way, increasing force only as it can be done without pain. It will be found that the rate of movement will increase as treatment progresses, and in the long run, time will be saved, while avoiding much discomfort and annoyance to patient and dentist.

THE LESSON OF THE NATIONAL DENTAL ASSOCIATION CLINICS.

BY JAMES MC MANUS, D. D. S., HARTFORD, CONN.

The members of the National Dental Association and the thousand or more dental on-lookers at the meetings and clinics held and given in Minneapolis this year, know that never before, and probably never again, will such a remarkable and comfortable opportunity be afforded to each and every one present, to see, hear, compare and learn, what dentists have done, and are doing all over the country today. And so cleverly had the committees arranged all the details of the meeting, and clinics that the progress in the last fifty years along manipulative, mechanical, artistic, scientific, and educational lines were clearly shown to the intense satisfaction and entire gratification of all who cared to give the subjects serious attention. The scene in the spacious, well ventilated and lighted State Armory, with many well equipped tables arranged and numbered for the various table clinics, the numerous dental chairs, for the first time plentifully supplied with clean towels and facilities for washing hands, and operating with some regard for the comfort of the patients.

The large number of patients in waiting and operators ready, the

Chief of Clinics in the center of the hall on a raised platform to announce the operators' names, the numbers of the chairs, and the class of operations at given stages, with time and opportunity, for careful inspection and study. A number of messengers to search for men and to deliver messages, the large attendance each day of interested onlookers, was a sight I believe that will never again be presented or equaled. And I say this because I believe in no other section in this or any other country will there again be found such a number of men banded together as the Black, and similar clubs in the west and northwest working as they have been doing so unitedly for years past in studying and systematizing methods that carefully and properly followed will successfully preserve the teeth. The instruments selected by these operators, their manner of using them, and the results attained were a revelation. That there are many fine skillful operators in every section of the country, often found in remote small towns we all know, but I do feel confident that never before were there so many thoroughly competent men to do difficult, artistic, serviceable operations, gathered in one building for two days to give out to their brethren in dentistry the knowledge they had gained, and to freely, kindly, show, explain, and to operate for their benefit. The writer was one of four appointed by the American Dental Association, to give the first clinics before its members in the Art Gallery of the Crosby Opera House, Chicago, in 1865. With few exceptions he has attended since then, the annual meetings of the American National and many state societies and special gatherings, including the Columbian Congress of Chicago, and the International Dental Congress at St. Louis. At many of these gatherings much was promised on the clinic programs that perhaps unavoidably was not delivered and the management of the clinic was often open to just criticism. The clinic committee of the Minneapolis meeting early announced in the journals a large number of interesting chair and table clinics, but before the meeting was held many more names and operations were added to the published list. And the program in the journals did not tell the full value or number of the clinics that were given. The record stands as follows:

Gold filling	45
Amalgam filling	4
Cement filling	3
Gold and porcelain inlays	42

Cases of prophylaxis	8
Oral operations	1
Table clinics	97
Surgical clinics	2
Other demonstrations	25

As for the management of each day's clinics, it was superb in all details, and gained for the chairman and his committee unstinted praise.

Many years ago I was convinced, and so stated in discussions, that to dental societies should be given larger credit for the rapid advance made, not only in mechanical and operative dentistry, but also along educational lines, that dental meetings were Post Graduate schools where the best advanced teaching in practical and scientific methods were shown. In over zealous moments during the years that have past, I have sometimes questioned the advisability or desirability of having clinics at national meetings; but the hope long deferred, of the ideal professional meetings has taken a new and clearer view of the value of well conducted clinics in educational development. It is a demonstrated fact, that the clinics and exhibits, are the great attractions that draw the dental crowd, and as the mass of the human family need dental operations and artificial substitutes, the clinics offer to that class of dentists an opportunity to brush against, see, and listen, to men of ability, education and refinement. No man could look on the operators at the recent clinic, and go away without being impressed and inspired to nobler efforts to give in the future better service to confiding patients. The work at the clinics, recalled to mind men, and operations made by them, that I have had the good fortune to see, and watch for many years past. As a young boy I well remember Dr. Chapin A. Harris, of Baltimore, Md., who called on my preceptor. Forty years later one of his early patients came under my care, and I watched and admired gold fillings that were placed by him in the mesial and distal surfaces of the upper incisors and cuspids. The lady removed from Hartford a few years ago, but when last seen the fillings and teeth were in perfect condition. For many years past I had frequent opportunities to examine gold and tin fillings that were placed forty years previous by Dr. Amos Westcott, of Syracuse, N. Y.; one of his fillings particularly interested me; it was a large tin filling, covering the buccal surface of the upper left second molar. When last seen the filling and tooth were in perfect condition and doing good service. I have seen many gold fillings that were placed by Drs. Maynard, of Washington, D. C., Allport, of Chicago, Parmly and Dunning, of New York, Tucker, of Boston, Searle, of Springfield, Mass., Wheat, of New Haven and Horace Wells, J. M. Riggs, and H. Preston, of Hartford, and all these operations were before the advent of the dental engine, rubber dam, Perry separator and the numerous preparations of gold, cement and varnish, to line cavities to help retain the fillings. I know that many dentists all over the country placed fillings of soft gold foil, with hand pressure that saved teeth, many had neither preliminary or professional education; they had no definite system, and their instruments were mostly of their own make; but they did save teeth for many, many years.

The year 1907 has so far furnished material for an interesting chapter in dental history. The record of the enthusiastic commendation at the presentation in New York City by Dr. Taggart, of Chicago, of his wonderful system of gold inlays, and the report in full of the Minneapolis meetings. I have watched and admired the new inlays, both porcelain and gold; I have tried many cements, and have hoped as devoutly as the inventors, that the inlays and cements would do all, and more than was expected of them. I have seen, as we all have, many failures, and no gold operations that are anchored in soft cement that I think will stay placed and do the service that the gold fillings placed by some of the men that I have named, are still doing.

The lesson of the clinics was technical, broad, and conservative as to cavity preparations, and told a new, and old truth, that gold foil manipulated by operators who knew how, was still first, as a tooth saving material; that what had been done in years gone by, without definite system, under the new methods and teaching there demonstrated and carefully followed, would assure permanent and artistic operations. A number of very interesting papers were presented that will appear later in the journals and transactions, and those who take the journals and desire to read them, will have time to leisurely enjoy them. Those who could not attend the meetings must be content with the reports that come to them from those who were present, and who must always feel grateful for the good work done by the Director of the clinics, Dr. Wedelstaedt, and his untiring associates, Drs. Clack and Searl, and all the others who so enthusiastically labored for the success of the meetings and clinics.

The same harmonious spirit was shown in the election of officers. The meeting will be held in Boston next year, with officers that have a well deserved national reputation, as cultured professional dentists, with large and varied experience in the conduct of dental affairs throughout the country.

OFFICERS.

The President, William Carr, D. D. S., M. D., New York City, State Dental Examiner for over twenty years, and well known as an experienced, able and judicious legal and legislative adviser; Professor of Oral Surgery and Dean of the College of Dental and Oral Surgery, New York City.

Vice-President, for the East, Wilbur F. Litch, D. D. S., M. D., Philadelphia, Pa., Editor *Dental Brief,* Dean of the Penn. College of Dental Surgery, Philadelphia, Pa., and one of the most accomplished literary men in dentistry.

Vice-President, for the South, Joseph P. Gray, D. D. S., M. D., Nashville, Tenn. A clean cut writer and teacher, Clerk of the Faculty Dental Department Vanderbilt University, Nashville, Tenn.

Vice-President, for the West, Alfred Owre, D. D. S., M. D., Minneapolis, Minn., Professor of Operative Dentistry and Dean of the Dental Department University of Minnesota.

Corresponding Secretary, Burton Lee Thorpe, D. D. S., M. D., St. Louis, Mo., formerly Dean of the Barnes Dental College, St. Louis, Mo. Associate Editor *Dental Brief,* Chairman Committee of Organization Jamestown Dental Convention, and well known as an orator and historian.

Recording Secretary, Charles S. Butler, D. D. S., Buffalo, N. Y., a dentist of rare literary and executive ability, Chairman of the Finance Committee of the St. Louis International Dental Congress, St. Louis, Mo.

Treasurer, A. R. Milendy, Knoxville, Tenn., a dentist of unusual executive ability and a most efficient Treasurer.

EXECUTIVE COUNCIL.

H. J. Burkhart, D. D. S., M. D., Batavia, N. Y., Chairman, Ex-President National Dental Association; President International Dental Congress, St Louis, Mo., and member N. Y. State Board Dental Examiners, a great organizer and parliamentarian.

J. Y. Crawford, D. D. S., M. D., Nashville, Tenn., Ex- President American Dental Association Hon. President Jamestown Dental Convention. A dentist of ripe judgment and rare executive ability.

B. Holly Smith, D. D. S., M. D., Baltimore, Md., Ex. President National Dental Association; Professor of Operative Dentistry, Baltimore Dental College. One of our most eloquent and forceful writers and speakers.

F. O. Hettrick, D. D. S., Ottawa, Kans., President National Association Dental Examiners; one of experience in editorial and legislative matters.

A. H. Peck, D. D. S., M. D., the President of the National Dentist Association meetings just held in Minneapolis, and whose efficient work told, and was appreciated by those in attendance.

Whatever may have been thought, said or published in the past, deserved or undeserved, as to the management or policy of the National Dental Association, surely the outlook for the coming year is hopeful and bright for ethical and professional progress.

DENTAL PARADOXES.*

BY C. M. WRIGHT, D. D. S., CINCINNATI, OHIO.

I wish to thank your committee for the honor conferred upon me be their invitation to read a paper to this Society. I take great pleasure in accepting.

The subject, "Dental Paradoxes," was selected because I have been impressed many times by the apparently glaring inconsistencies which exist between our commonly accepted methods of practice and statements advanced by scientific and reliable men.

Our fundamental principles of practice are so frequently shaken by authoritative dicta from men whom we have all learned to honor, that I have asked myself the questions, Where is the truth? Do we really know anything? Can we not even see the stars from the bottom of the well, where Truth is said to dwell?

---

*Read before the Northern Ohio Dental Association, June, 1907.

Many years ago, Dr. Wm. H. Atkinson said in his characteristic manner, "Truth is Truth protempore, or, until we know better."

In reviewing the changes which have taken place in the principles of medical and dental practice within the recollection of some of us here present, and within the lifetime of this Society, we can easily agree with Dr. Atkinson.

The investigations of the Bacteriologist, the Physiologist and the modern Pathologist, along the lines of Etiology and of Function, and of the Interdependence of different and remote parts of an organism, have certainly caused volcanic changes in the aspect of the landscape. Surface boundaries and elevations, and deep sea soundings have so changed that if our own late medical teachers should return to Earth, they would be as strangers in a new country.

Man has not changed in this time. He exhibits no evidence of marked evolutionary modifications in structure or function. No tissue or organ, or part of an organ shows increased degenerative alterations or tendency toward sinking into a vestigial incumbrance.

Environment has not affected to any appreciable degree the eye, the ear, the throat, the vocal chords, the teeth, the blood elaborating glands, the nervous tissues, or even the vermiform appendix and the pituitary body, since our personal study or historical records began. Our attitude as medical men, surgeons, physicians, dentists and specialists, has changed towards this immutable man—man our patient.

Our treatment of him has been so altered that we can hardly claim relationship with the individual bright lights that illuminated the path of Medicine in ancient times. Such lights as Hippocrates, Galen, Ambrose Pare, and the more recent Harvey (1578-1658) and Haller (1708-1777).

This glimpse is a suggestion of what we may expect in the way of change in theory and practice, as knowledge grows under more favorable opportunities for study; and as we climb higher or dig deeper into the Science of Medicine.

The man who climbs a tree for the first time is so astonished by the wide view of hill and dale, of sky and cloud, and by the near view of interlacing branches and waving leaves, that when he looks down, the objects he has left below appear to him as curious and unexpected as they did to the man in Baccaccio's tale. And his statements should be modified in the same way. He should always explain: "That's the way it looks to a man up a tree."

The man who digs a deep hole in the earth passes various layers. He may come to a stratum which seems to him curious and unusual in structure, color and temperature, and he is liable to construct a theory, then and there, which would be paradoxical, and in no way agreeing with the generally accepted notion about strata formations.

This danger from premature conclusions besets all Science. It is the reason for many a medical and dental paradox. It does not, of course, account for all, for old theories upon which orthodox practice has been founded have frequently been proven to be obscure or false. Vox populi in medical matters is not always Vox Dei. But leaving the possible causes, let us call to mind some facts.

There are in this country, and Canada, some 50 colleges, with full corps of teachers, separate buildings, costly appliances, long terms of study and drill, lectures and demonstrations, and well equipped infirmaries—all for the purpose, definitely expressed, of preparing men for the practice of the profession of Dentistry. There are 35,000 men, more or less, specially educated, now spending their lives and energies in the practice of this distinct profession. In the face of this, we are asked every now and then, by distinguished men in this profession, to stop and consider whether Teeth are essential to Civilized Man! The man up a tree looks down from his height and sees an old fellow 90 years of age on the ground below, grinning with superabundant vitality, and while bolting his food, swearing that he has no need of teeth, for he has not had one in his mouth for half a century. Again he sees from his lofty perch a lot of pre-chewed, predigested, "prepared by modern chemistry" foods; he believes that he has made a discovery and immediately builds a doctrine and announces that, in this age of chemistry and ingenuity, Civilized Man does not need Natural Teeth.

Our dear friend Dr. Fletcher, of this state, whom we all love and admire, asked the question a year ago, in a paper, entitled, "Are Teeth Essential to Civilized Man?"

Another friend and leader in the East—a strong man and a grand Goliath in the camp of the Philistines—in a recent paper bitterly criticises the methods of educating modern dentists, and deplores the facts that students are not taught to get down to a fundamental principle in the salvation of human teeth. He has been digging for many years, and has come to a stratum of Prophylaxis, which so attracts his attention, that he calls from the bottom of his hole, "I have discovered the foundation of the whole Medical and Dental Profession. They rest on this: Take this away and the entire superstructure falls—colleges, practitioners, editors, all fall!"

He does not stop at this (his best friends sincerely wish he had), but continues, "I have also discovered all that you need know about the secretions of the mouth. These products of the glands are water, and of very little physiological value—mastication is a simple pastime—oral digestion is a fad, teeth are unimportant appendages."

Then the giant comes up to the surface and says, The only way to save these useless appendages is for the 35,000 or more dentists of this country to buy orange wood by the cord, and pumice by the barrel, and get busy polishing the teeth of every body all the time.

A basal doctrine in dentistry has been, and is, that the teeth are valuable organs of mastication, and that thorough mastication of food stuffs is essential for the proper preparation of this raw material for the subsequent action of various enzymes. These convert the different proximate principles of the food into the solutions which will appeal to the absorbent cells, which line the alimentary canal. And again, that these living cells, by their functional activity, metamorphose these several solutions, so that they may enter the currents of lymph and blood in a form that can be carried to every living cell in the body.

Every now and then the value of this vital initiatory preparation by mastication and insalivation and "oral digestion," is called in question by some man up a tree or down in a hole.

I remember a dentist friend who was practicing in a city of Switzerland many years ago, who said he had been watching his dog eat, and that the dog swallowed a piece of steak after one or two bites, and that his teeth were of no use as masticators.

At that particular time there was a wave of incredulity passing over medical minds about the functions of different parts of the alimentary canal. The mouth and the stomach were taking back seats. The duodenum was first at the feast. My friend tried to learn physiology from his dog, and from that time began to cultivate the function of deglutition on large pieces of meat and chunks of hard boiled egg, to the exclusion of the preliminary function of mastication and insalivation, until I wished he would choke.

When from pyloric cancer, a stomach has to be removed entire, a surgical attachment has been completed between the Duodenum and

Oesophagus—and the patient lives—and after a while, accommodates himself to the maimed conditions, would it be logical for surgeons to set up the doctrine that the stomach is not essential to Civilized Man? Or that it is only a handy pouch?

The propositions of the layman Fletcher were of sufficient interest to physiologists like Cannon and Chittenden and Sir Michael Foster, to cause them to review the accepted belief in the value to health of thorough mastication, insalivation and tyalin digestion. The conclusions of these distinguished gentlemen, after the careful and ingenious experiments, in their review, should put a quietus on paradoxical propositions on this subject and by dentists of all men.

Personally, the recent studies of these and other men, on the functions of well arranged teeth, have so impressed me, that I entertain a feeling of deep gratitude to the physiologist, whether he be a dentist or a physician, for lifting Dentistry out of the tooth carpentery business, into which she has a tendency to fall, and placing her side by side, on the same plane with specialties like Rhinology, Larygology, Opthalmology, etc. I have taken so much of your time with this, that I shall hasten over one or two other paradoxical aspects of Dentistry.

What about the tooth brush as a prophylactic instrument and mouth toilet necessity? I do not know the origin of the tooth brush, but I think I am safe in saying that among the so-called better classes of England, France, Germany and America, nothing would be more humiliating today than for one to point the finger and say this man or woman or child doesn't own a tooth brush. The family tooth brush and "the tooth brush that belongs to the boat," have receded into a dim past. The use of this individual article is universal and its hygienic value thoroughly believed in by dentists and patient; yet, Dr. Clowes, a celebrated dentist of New York City, publicly proclaimed 35 years ago, as was reported in a dental journal of that day, "If I were called before a court of justice and asked the question, whether the use of the tooth brush does more good than harm to man, I should have to reply: Before God I believe it does more harm than good." This did not affect the generally accepted belief in its hygienic importance, nor in the custom of its use. Every dentist recommends its daily employment, together with some more or less abrasive powder. Your Dr. Barnes, of Cleveland, has given platform demonstrations of a scientific way of using this indispensable article of the toilet for hygienic purposes.

In the early months of this year (1907), Prof. Miller, of Berlin, whom we consider the composite Koch and Pasteur of the Dental Profession, published in the "Dental Cosmos," a series of profusely illustrated articles, showing the abrasive qualities of the brush and powders on natural human teeth. The destruction of hard tissue, which follows the continued employment of this universally recommended article, is appalling. Dr. Miller's articles are records and illustrations of coldly scientific methods. Ach! Mein Gott in Himmel! Am I right in classifying this as a Dental Paradox?

To me, I am free to admit that these experiments and the conclusions which hover about them, are as startling and as confusing as was a recent midnight explosion of 250 pounds of dynamite in my neighborhood in Cincinnati. The windows of my mind are shattered and my brain must show new cracks.

Again, in the line of hygienic care of the mouth and teeth, for years we have taught that floss silk should be passed between the teeth to remove the resting debris of food which forms such fine breeding grounds for fermentative organisms of various species, until now it is a part of the creed of the dental profession and a daily habit of dainty patients. But, a slip of the floss, causing it to cut through the stratified epithelia of gum tissue, after this floss has been nicely charged with septic matter, is known to be a successful operation for the innoculation of marginal gingival tissues.

This brings us to the very recent studies of the cultured bacteriologist, biologist and pathologist, Dr. George W. Cook, of Chicago. In a valuable paper, published in the Summary, and in the *Dental Digest* (Feb. 1907), on "A study of the Mucous Membranes, with special reference to Oral Prophylaxis," the doctor dashes very "hot water" on our thoroughly incorporated and broadly accepted notions about antibacterial and antiseptic mouth washes in our care of the teeth and mouth.

Dr. Cook says: "Ever since the elucidation, by Miller and others, of the fact that bacteria are constant inhabitants of the oral cavity, and that these organisms play an important role in the causation of dental caries and other pathological lesions, the profession of Dentistry has been seeking an agent that will destroy the bacteria of the oral cavity; completely losing sight of the fact that the oral mucous membranes, for the best maintenance of the digestive processes and for the protection of the deeper structures should be kept in the most healthful physiological condition. When we take into consideration that the mechanism of the mucous membrane in itself is protective against any foreign parasitic life, and the fact that the mucous membrane plays an important part in furnishing a neutral chemical field for carrying on certain digestive processes, we gain the great fact that no agent should be used as a bacteracidal; for such a compound will invariably produce harm, not only in that it disturbs the action of the Ptyalin of the saliva, but that it renders the functional activity of the mucous cells incapable of furnishing the various compounds that are so essential to the enzymes of the saliva, and that it many times destroys the true mechanical structures of the mucous membrane, thus changing it from a physiological to a pathological structure.

"In the study of the morbid physiology of the mucous membrane of the human mouth, after using any of the so-called germicidal agents, or even those that are feebly antiseptic, the mucous cells are found to degenerate gradually and instead of having constantly discharged mucin in the normal quantity and normal chemical constituents, it becomes a pseudomucin."

From this we learn that our beloved profession, with the best possible intentions, has been placed in the position of applying drugs just as does the veriest Charlatan. After reading Dr. Cook's paper I felt like exclaiming with Napoleon to his physician at St. Helena: "Believe me, we had better leave off these remedies. Life is a fortress which neither you nor I know any thing about. Why, then, throw obstacles in the way of the defense? Its own means are superior to all the apparatus of your laboratories. Medicine is a collection of uncertain prescriptions, the results of which, taken collectively, are more fatal than useful to mankind."

Verily, Truth is Truth pro-tempore.

HEMORRHAGIC DIATHESIS.

BY BERNARD BRAMM, CHICAGO, ILL.

The "Treatment for Hemorrhagic Diathesis," given us by Dr. C. H. Oakman, in the July DENTAL REVIEW, may be duly considered, as it is worthy of attention. But you will have patients call upon you to have one or more hopelessly decayed teeth extracted and through some unaccountable manner you have not taken the history of this patient, or you never thought that an uncontrollable hemorrhage will ensue in the attempt to remove these teeth. After extraction your patient may return with a severe hemorrhage. You are trying to arrest it the best you know how, and if all efforts prove futile you may prescribe the following:

℞

Vinum Ergotae (Squibbs)...............f ℥ iij.

Sig. One teaspoonful every two hours.

(The patient need not take all of this.)

This being a very potent hemostatic, it is well to bear in mind that it should not be given to nursing-mothers, although the Wine of Ergot according to the U. S. Pharmacopeia is only a 15 per cent of the drug in the wine and it would therefore not be objectionable in such moderate dosage. It is, however, liable to excite nausea.

Hemorrhagic Diathesis is not sufficiently understood. Dr. Kirk has given us an extensive chapter on this subject in his text-book of Operative Dentistry which is worthy of comment. He claims: "The blood may be defibrinated to such extent that it has lost its power of coagulation and so will not form a clot, or the muscular coats of the vessels have lost their tonicity."

When we have patients call on us for the extraction of teeth, they have invariably been suffering from pain of long duration, perhaps years, by which time they have become nervous wrecks, generally debilitated, and thus the entire metabolism is broken down. In these cases we may expect trouble. In cases above cited, some of them under my observation, I have been successful by first ameliorating the pain of the affected teeth, to a minimum, giving the patient a tonic of iron, quinine, strychnine and elexir (an official preparation) but which must always be followed by an alkaline mouth-wash, such as bicarbonate of soda or Phillip's milk of magnesia to neutralize the action of iron upon the teeth. I have thus been able to bring about a better condition of the patient. It is imperative to consider such cases, but sometimes we are very unfortunate in this respect. Patients come to us who are difficult to control. They will leave our offices in search for some one who will extract these teeth "while you wait." It is not so much our fault if we at times fail in our undertakings.

The dentist *must* and should have the co-operation of the patient, and if such be not the case, the dentist would do better to refuse to perform any operation. It is not the financial part only that ought to appeal to us. Coleridge said:

"Tranquillity! thou better name
Than all the family of Fame."

This is a verse referring us to the other side of life.

PROCEEDINGS OF SOCIETIES.

THE WISCONSIN STATE DENTAL SOCIETY, MADISON, JULY, 1906.

DISCUSSION OF DR. BLACK'S PAPER, "THE REORGANIZATION OF THE STATE SOCIETY IN ACCORDANCE WITH THE ILLINOIS PLAN."

DR. H. L. BANZHAF, Milwaukee:

It has been said that Dr. Black has organized not only the largest, but the best dental society in the world. I hope and believe that the essayist will be largely responsible for the organization of what may not be the largest dental organization or society in the world, but I hope that it may prove to be one of the most useful societies. I think that we owe Dr. Black a debt of gratitude for his willingness in responding to the invitation of the Committee to come to Wisconsin and tell us about what they have actually done in Illinois; for, after all, and in the last analysis, practical achievement is what we look to. In the larger affairs of the world, practical achievement is the result of organization. It has been said that dentists are not good organizers, that they are not methodical, that they are not good business men, being professional men. I believe that is very largely due to the fact that such earnest effort has been expended toward the scientific advancement of the profession in its various departments, that for a time we have lost sight of organization. It was stated here yesterday by a number of speakers, that legislation was calculated to benefit the dentists. I made the statement that all legislation was calculated to benefit the people, and the essayist has forcibly put it to us that not only in our professional efforts, but also in legislation, the motive is supplied by the demands that the public makes upon us.

We spoke yesterday of the development of the young men. The plan in Illinois favors the establishment and maintenance of local societies throughout the state. The home or local society is the place to develop your young men. There you bring into closer relationship the men in that locality. You give the young men an opportunity to discuss questions, and in due time these men will lose their self-consciousness and will really do good work, so that when they come to attend the state societies, they are prepared to do something for the advancement of Dentistry, and thus benefit the people whose servants we all are.

The essayist has mentioned good fellowship. I do not know that I can think of anything—dismissing scientific research and all that for the time being—that is so calculated to advance our professional interests here in Wisconsin as this good fellowship. You go to Minnesota, or Illinois, or some other states that you have visited, and what do you find? Good fellowship. Harmony. Brotherly love. I hope that you won't accuse me of being sentimental on this point, but you know when we take away that Divine Elixir which we call "Love for our neighbor" or "Love for our brother dentists," you are laying the foundation of supreme selfishness, and placing a direct limit upon advancement. So I believe that we can do more here in Wisconsin by organizing local societies and having men become better acquainted with each other.

The essayist has referred to friction. You cannot do away entirely with friction, but I think if men will only be reasonable, and will give and take, there ought to be no difficulty on that score. There are two sides to every question. Perhaps if you think of it as the years roll by, and as you have noticed these conditions that arise from time to time, it is just barely possible that we are all slightly at fault, and if we will only forget ourselves, and think of what our real duty in this matter is, I think we can aid very materially in bringing about a very desirable and lovely condition here in Wisconsin.

Legislation has been referred to. I believe that it has proved to be a practical test that when you go before the legislature, or go to the governor of any state, unless you can show you have a majority of the dentists, or the people that we are working for, with us, that very little attention is paid to you. If you want reciprocity, do not blame the State Board if you do not get it. There are certain conditions that they have to consider. If you want something you haven't got, go and get it. A plan of this kind will do away with the most objectionable feature in society work, and that is politics. Politics should be eradicated. A headline in a local paper yesterday made me think of how very poorly we are understood by people, by physicians, by pharmacists, by nurses, by all members of the healing art. Whose fault is it? Why, ours, of course. Whenever you have present a condition with which you yourself are dissatisfied, I think the blame is with ourselves. So if we are not satisfied to be called "toothpullers" and "tooth extractors," and names we think are undignified, you may place the blame at the door of the dental profession, very largely.

The essayist has referred to the National Dental Association. I believe the time will come when we will have a national organization that we will all be proud of, and, as stated by the essayist, if a few more states will follow the example set by Illinois—and we cannot deny that Illinois has pointed the way so far as our profession, at least, is concerned—the problems now confronting the National Dental Association will take care of themselves.

I am interested, as you are, in the welfare of the Wisconsin State Dental Society, and I have pondered as to the best manner in which that could be accomplished, and rob it of every appearance of anything in the way of a political effort. That may seem very simple to those of you who have not thought very much on that question, but when you think about it, you will find it is not so very simple. So, when Dr. Black appeared upon the scene we had a discussion about it, and I may take the liberty to refer to that discussion, I hope.

Dr. A. D. Black, Chicago:

Certainly.

Dr. H. L. Banzhaf:

I asked the doctor, bluntly, "Now, doctor, how can we, here in Wisconsin, apply this plan of yours in Illinois? How can we do it without creating friction, because that is one thing we want to avoid?" I asked Dr. Black would he kindly prepare or submit a resolution, which I am just going to read. I am not going to offer it. There were certain blanks left here for me to fill out, and since my talk with him I have thought a little further and in order to bring this matter up for your consideration, I want to read the resolution just as Dr.

Black has prepared it, and I will interpolate some of my own, and tell you where mine comes in. I will not move its adoption. It is merely to bring it before you, and if you don't like the plan, all you have to do is to dismiss it, and I don't think anyone will be blamed. This is what the essayist has prepared: (Reading.) "Resolved, that it is the sense of this meeting that the Wisconsin State Society be reorganized on a plan similar to that of the Illnois Society, and that a committee, composed of" now, this is my own, say the president of 1904, the president of 1905, the president of 1906, and the incoming president. I first thought seven should constitute the committee. Dr. Black believes that is too large a committee, and I do not know but he is right. There you have four, and then let the four—or let the society—select the fifth man. Let them select their own chairman. Let them work it out so that next year we cannot say that we lost a year's time.

Now, by Dr. Black: (Reading.) "To be appointed to carry out the work. In view of the fact that it is impossible to present the exact wording of the necessary amendments to our by-laws at this session, this committee is instructed to draft such amendments and mail copies to all members previous to the next meeting, when they shall be voted on.

"This committee shall act as an *ad interim* committee as to all matters that may arise in connection with this work of the society, and shall have power to change the amount of the dues of the society as they see fit. They shall also have power, with the officers, to organize local component societies."

Now, gentlemen, that is the resolution, and I will fill it in and leave it with the secretary. Possibly in the discussion some better plan may appear. It may be the desire of this society to elect the committee at this time. I do not care how it is done, so long as it is done.

I would like to add that after you have discussed this resolution, in connection with the paper, if you decide that this is a good resolution, I would be glad if someone would move its adoption.

President Van Stratum:

I would like to hear from Dr. Hanaford, of Rockford.

Dr. Marvin L. Hanaford, Rockford, Ill:

I want to emphatically corroborate all that Dr. Banzhaf has said with reference to what Dr. Black has done for the Illinois State

Dental Society. Dr. Black has been the central moving spirit which has brought about the reorganization of the state. The first meeting of the State Society, after its reorganization, was held in Moline, at which, as he states, we had thirteen hundred members. It was by far the most enthusiastic meeting the State Society ever held, and I might say, the most enthusiastic meeting I ever attended anywhere. The influx of young men, I do not think, will work, as Dr. Black intimates it may, to possibly lower the standard of scientific work done. I doubt whether that has been the case. At the meeting last May, at Springfield, quite a number of essays were from the younger men. For instance, a paper on the inlay question, by a man I never heard of before, was one of the best things on the subject I ever heard anywhere. I doubt if the subject could be better covered than it was by that gentleman. Another paper upon one of the phases of anesthesia, was remarkably well done, also by a young man, whom I never heard of before.

Dr. Black speaks of the necessity of keeping up the interest in the local society, and of the work that the local society may do. He says that some societies discuss fees, get up black-lists, and all that sort of thing. The society with which I am connected does nothing of that sort, and I hope it never will. I do not believe in discussing fees in dental societies. I do not believe in fee bills. I never would sign one of any kind. We in Rockford have had a local society for about nine or ten years, long before this reorganization scheme was thought of, and the matter of developing the men has been shown up in a most wonderful manner in that society. When we first organized we had any number of men who said, "I can't write a paper; I can't speak upon the floor; it is utterly impossible," but I tell you, gentlemen, that the only thing that has troubled us is to have time enough for the gentlemen to speak—all who want to—at the meetings. Every man speaks, without an exception.

There is one thing especially, which has been done. One of these men who said he never could write a paper, has written two papers which I remember better than any other two that have been read before the society; one upon the subject "What shall be done with the teeth of the poor?" which was very thoroughly discussed, and led to the establishment of a dental infirmary in one of the city hospitals, in which work I believe our local society was the pioneer. We were given a room in one of the local hospitals, and we fitted it up with a chair, engine, cabinet, gas apparatus, etc., and three one-half days in each week some member of the society is there from two to five o'clock to treat, gratuitously, the teeth of the poor. The work has been exceedingly interesting, and valuable. We have quite a large population of working people, poor people, and the children come to us in large numbers from that class, and are treated gratuitously.

I certainly should like to see the state of Wisconsin organized in a similar way, and I have no doubt you would find, as we have done, the efficiency of the State Society trebled or quadrupled.

Dr. W. C. Wendel, Milwaukee:

I was not present when the essayist began reading his paper, but I would infer from the remarks that it is the intention to organize one gigantic society, with sub-societies, supporting this one great central organization. I think it is a very good thing to undertake something of that kind, but I fear all our members do not realize what they are undertaking. While I think at the present time that it will be a grand, great and noble thing for the advancement of dentistry, yet in the face of all that, I would like to see every member of the Wisconsin State Dental Society go to their hotel, or their lodging place tonight, and think that matter thoroughly over before selecting their committee and undertaking this matter. I do not entirely approve of Dr. Banzhaf's resolution in regard to selecting four ex-presidents to constitute this committee. I think that the Wisconsin State Dental Society ought to be competent enough to select a number of their members that will look to its welfare, to act upon this committee, and then not to do anything hastily but to think the whole matter over for a year, and bring it up before your next meeting. We have had considerable trouble in this state, in one way and another, on questions that are acted upon very quickly. They are very hard to rescind. I hope the members will consider the matter seriously. It is a gigantic trust—it is nothing more than that, I think. Very often committees are appointed without consideration as to what is expected to be done. We have talked about politics not entering an organization. I wish it was free from those conditions. No one would like to see it more than I, but politics enter into all organizations, and there is always more or less faction and friction. There should not be. I hope for the interests of the Wisconsin State Dental Society, that they will select their committee from different parts of the state, and consider the whole matter well before they undertake it at all.

Dr. C. T. Rodolf, Muscoda:

This is a question I have been interested in for a number of years. I think whatever action we take, we will have to take tonight, or we won't do it at all. If you go home and think about it a year or ten years, you won't know any more about it than you do now. Every year we add 30 to 40 members, and we never get any more than we had. I know in the Southern Wisconsin Society about 30 names were presented and voted upon, and I doubt if more than ten people became members of the society. They were voted on at the last minute, and they went home. Perhaps they will present their names next year. They never signed the constitution or paid their fees. I believe we ought to reorganize on some basis by which we can add members to this society, and I think the time to do it is right now. If we put it off until next year, the committee will have to work another year, and that means two years before we get to work.

Dr. W. H. Cudworth:

There are some things in regard to this question that demand our attention. I feel in regard to this matter that it is the province of the Wisconsin State Dental Society to extend a helping hand to every practitioner in the state. We are not looking to forwarding our own society as a society of itself, but to extend a helping hand to the men that have not seen fit to come into our State Society.

Now, Dr. Banzhaf has offered a resolution for consideration by this society, which in the main is a good one, but it seems to me the committee can be selected from the society along different lines. I honestly believe that the society is capable of selecting a committee that will attend to that matter without stating that the committee shall be such and such men in the resolution.

There is another thing to be taken into considerataion. We have in the state of Wisconsin a number of local societies that might be looked to as a nucleus for the formation of these component societies. There are some in the northern part of the state, some in the southwestern part of the state, and some in the eastern part. If it could be brought about to interest those societies already formed, in the reorganization, it seems to me it would be a great help. Why wouldn't it be a good plan to have the Secretary, or some one who has authority from this society, correspond with the different secretaries of those societies and interest them in the question, and see if they could not help us? We cannot do it all. In that way we could work faster than we could by taking steps through our own organization alone.

Dr. H. L. Banzhaf:

I am very glad to hear that there is some exception to a part of this resolution, and if some one will substitute something better I shall be perfectly satisfied. I mentioned the Presidents. The suggestion is not original, but was one that was worked out by Thomas E. Weeks, of Minnesota, and it struck me as a very practical thing. But, I also foresee that possibly the society might feel that it could, of its own volition, elect the members of this committee, if some one will suggest a manner of doing that.

Dr. W. H. Cudworth, Milwaukee:

If you are going to do anything of this kind, do it now; don't put the matter off.

Dr. W. N. Murray, Minneapolis:

I believe I am an honorary member of the society, but as an outsider I will make a suggestion. I think to facilitate this plan that has been outlined by Dr. Black, it would be far better for the good of this society to have a committee composed principally of members in the city of Milwaukee. You have got to have a central point to work from. Give them the power to appoint their sub-committees in the local districts. Milwaukee occupies the same relative position in your state that the city of Chicago does to the state of Illinois. They can get together easily and formulate their plans.

Dr. B. G. Maercklein, Milwaukee:

As near as I am able to observe, the objection seems to be not so much to the resolution as to the question who shall constitute the committee authorized by this resolution. I would suggest that we head that committee with the only remaining charter member of this society, making him chairman of the committee, Dr. Arthur Holbrook. I would perhaps supplement that by adding the Dean of each of the Milwaukee Dental Colleges.

Dr. H. L. Banzhaf:

I object, and if I am still in command, I will positively not act.

Dr. B. G. Maercklein:

Take, then, the incoming President as the fourth member of the committee, and let the committee choose a fifth, or a member at large, not a member of this society, from any local society of some other place. Then let the committee report progress and the possibility of reorganization at the next meeting, a year from this time.

Dr. A. D. Black, Chicago:

May I interrupt the discussion just a moment? It occurs to me that you might settle this, possibly, in a little different way. I only offer this as a suggestion that you might adopt this resolution tonight and decide that you will elect the committee tomorrow, when you elect your other officers. If you choose, and think it advisable, your chair might appoint a committee tonight to look over the ground, and report to you tomorrow. I would warn you once more that in the selection of this committee you must have some men on it who will devote time to it, and do some hard work. Our reorganization committee, in the first year of our work, sent out over 20,000 pieces of mail. That is not any small proposition for a committee to undertake. I do not say that you will want to send out as much here as we did, but you must have some men on that committee who will push it good and hard.

While I am on my feet I want to answer what the gentleman said about the local and district societies out through the state. We had in Illinois thirteen or fourteen such societies in existence and faced the same conditions you have here. In every case we ask the local society to adopt the new constitution and take in a little more territory around them, which they all did. We had no difficulty about that.

Dr. W. H. Cudworth, Milwaukee:

I move you that when the order of business, "election of officers and various committees," comes before this body tomorrow, that this society elect a committee of five to act upon the question that has been brought before it tonight. Cut out your past presidents and future presidents and college representatives and let every man have a vote.

Seconded.

Dr. H. L. Banzhaf, Milwaukee:

I think I understand the purport of Dr. Cudworth's motion, but it does not contemplate what is contained in this resolution. I think the doctor really meant that this resolution be adopted with the additional clause that he has just added. With that clause alone you will have no working basis. Am I right, Dr. Black?

Dr. A. D. Black, Chicago:

You should adopt this resolution with the section omitted which provides for the committee and elect the committee tomorrow.

Dr. W. H. Cudworth, Milwaukee:

The only opinion I have formed in regard to this matter has been from the latter part of Dr. Black's paper. Personally I know nothing about it, but these facts have simply appealed to me as a proper way of disposing of the question before the house tonight.

Dr. A. P. Davis, Hortonville:

What are the duties of this committee? It seems to me, from the discussion, that the people don't all have the same idea what the committee is to do. I would like to have the resolution read again, and have it explained just what the committee is to do.

Dr. T. A. Hardgrove, Fond du Lac:

Aside from that part of it which provides for the naming of the ex-presidents to act as a committee, it would be all right to pass on tonight. Then the society could elect the committee when they see fit. The resolution is all right except for that particular part.

Dr. W. H. Cudworth:

To facilitate matters I will offer my motion as an amendment to the resolution read by Dr. Banzhaf.

Dr. A. D. Black, Chicago:

I have changed this resolution. May I read it as changed? I think it will cover your idea.

(Reading):

"Resolved: That it is the sense of this meeting that the Wisconsin State Dental Society be reorganized on a plan similar to that of the Illinois Society, and that a committee of five be elected at tomorrow afternoon's session to carry out the work.

"In view of the fact that it is impossible to present the exact wording of necessary amendments to our by-laws at this session, this committee is instructed to draft such amendments and mail copies to all members, previous to the next meeting, when they shall be voted upon.

"This committee shall act as an *ad interim* committee of this society in all matters that may arise in connection with this work, and shall have power to change the amount of the dues of the society, if they see fit. They shall also have power, with the officers of the society, to organize local component societies under rules similar to those adopted by the Illinois State Dental Society."

Dr. W. H. Cudworth, Milwaukee:

I second the motion.

Dr. A. P. Davis, Hortonville:

It appears to me that the resolution would be unconstitutional; that it is an amendment to our constitution now, and our constitution provides that we must have notice of a year. We can adopt that as a recommendation, to be voted on a year from this meeting.

Dr. A. D. Black, Chicago:

Your by-laws distinctly state that they may be amended at any session, and this is an amendment to your by-laws. I read it today.

The resolution was adopted.

Dr. E. J. Hart, Madison:

Since our last meeting we have lost three of our members, Dr. Chittenden, Dr. Demming and Dr. Persons. I move you that a committee be appointed to frame suitable resolutions of respect. It seems as if in the case of Dr. Chittenden something further ought to be done by this society; some further mark of respect. He was one of the organizers of the society, attended every meeting and probably did more than any other one man toward the up-building of the society.

The motion was carried.

AMERICAN DENTAL SOCIETY OF EUROPE, THIRTY-FOURTH ANNUAL MEETING, HELD AT ROME, MARCH 29, 30, 1907.

DISCUSSION OF THE PAPER BY DR. W. M. COOPER ON "A PLEA FOR MORE CONSERVATIVE DENTISTRY."

Dr. W. A. Spring

Approved of every word in the paper and thought the author had struck the keynote of conservative dentistry. Good gold fillings in back teeth to sustain mastication would always do the best work, provided the teeth were strong enough. It had to be recognized, however, that some teeth had so far gone that a gold filling could not be put into them, and in that case some kind of inlay was of value, but for the regular wear and tear of every day a gold filling was unapproachable.

Dr. N. S. Jenkins

Said that conservatism was a doctrine which should be preached with heart and soul. He also agreed in most particulars with what the author had said. There was no doubt that in the very inception of a new method of treatment enthusiasm led many a man into ways which he knew not of, and which brought to him and to his patients a certain degree of disappointment and misfortune. He took issue with what perhaps the author did not exactly intend to say with regard to the endurance of porcelain fillings in places where the stress of mastication came upon them. There were innumerable instances where the porcelain inlay or the hard porcelain built up crown was immeasurably superior to gold, not only because it had a very resistant surface, but because it was vastly more comfortable and cleanly. Some of the cases the author had in mind were unquestionably cases where the porcelain inlay was not advisable, but there were very many cases where a properly made porcelain inlay was far more resistant than gold. In practice every individual operator had to consider each case seriously. It was a terrible mistake for any man to work upon a system which he tried to adapt in all cases. Whether he was an enthusiast for the use of gold or porcelain, or a believer in porcelain crowns and bridges, or in plates, he needed under all circumstances to make a careful study of the case before him, and to use his trained judgment in selecting for that case the absolutely ideal method of treatment. There would be many instances where one man found it not quite possible to do what another could do, and if it was an ideal case for a certain method of treatment, and he did not feel he was equal to that treatment, he should turn the case over to the hands of a specialist who would be able to do what perhaps the general practitioner could not do so successfully.

Dr. W. M. Cooper

Appreciated what Dr. Jenkins had said as to cases where a porcelain inlay was indicated and would stand the wear and tear, but he had found in his own practice that he had often asked the inlay to do too much; it was not the fault of the inlay, but of his application of it. There were certain types of teeth which showed continual shortening of the bite, and in those cases, unless they were watched very carefully, porcelain, being such a dense substance, would not wear with the normal teeth, and there came a time when it was doing more than its share of work. When porcelain inlays were indicated on account of their artistic value, or because the teeth were so damaged that a gold inlay was not applicable, it was necessary to watch very carefully in order to be sure that the time would not come when trouble would be experienced.

DISCUSSION OF DR. MITCHELL'S PAPER, "VACCINATION A POSSIBLE CAUSE OF DENTAL DEGENERACY."

Dr. George Northcroft

Felt that it was only possible to accept the paper as an expression of opinion by a serious worker. To make it of real scientific value it would be necessary to have observations made on many cases where vaccination had been employed and where it had not been employed, and then take the average number of cases in which hypoplastic conditions of the teeth occurred. Simply to suggest that such and such conditions of the teeth might occur owing to vaccination was interesting, but left the problem undecided. As the author had said, before any pronouncement could be made on the subject it would be necessary to have very extensive data at the disposal of the investigator. Obviously there were many other undeniable conditions of diseases at work which would produce the malnutrition of dental organs during infancy, and he thought the author had been a little carried away in attributing most of the hypoplastic conditions which occurred to vaccination, and he wished to join issue with the author on what he thought were rather sweeping aassertions.

Dr. L. J. Mitchell

Thought the ground Dr. Northcroft had taken was largely cut away from beneath his feet by the title of the paper, "The Possible Cause." There was nothing dogmatic in the paper at all. His brother and he had often discussed the question, not of vaccination being the cause of all, but as being one of the causes. About a month previously a medical practitioner in London had asked him whether he had considered the question, because he was distinctly of the belief that vaccination had a great effect on dentition in many cases he had noticed. The paper was intended to have been presented at the previous meeting, in Berlin, but as it had not been, in the interval his brother and himself had questioned parents with regard to the condition of their children both before and after vaccination, and in many of the cases they had been told that the child had had a very bad time. The object was to obtain data, and that was impossible for any single man, but now that attention had been drawn to the subject it was possible for many inquirers to go into the matter. It was customary to ask whether the child had had a serious illness, a cough, diphtheria, or anything of that kind, but very seldom were questions asked as to what happened when the child was vaccinated. He had in mind three children, two of which had exactly the class of teeth usually seen under the circumstances, and he found that those two children had been vaccinated between the ages of four and six months, while in the case of the other child, who was weakly, the vaccination had been deferred until it was five or six years old. He thought if the matter was taken up, especially in large institutions where the opportunities were greater than in private practice, a great deal of information would be obtained that would be of benefit in throwing light on the subject.

DISCUSSION OF PAPER BY DR. N. S. JENKINS ON "SOME OBSTACLES IN CROWN AND BRIDGE WORK."

DR. FIELD ROBINSON

Considered that anything Dr. Jenkins brought forward was so concise and precise and of such an exhaustive nature that criticism became absolutely impossible. The samples Dr. Jenkins had passed round showed the kind of twists which made one scratch one's head and think, and he desired to know very much the author's method of treatment in such cases: how the possibilities of running through a curved root could be carried out, and how, with the fine instruments and tissue paper the author had presented, it was possible to get to the end of the roots. His real object in speaking, therefore, was to express his profound admiration for the paper and for the immense trouble Dr. Jenkins had taken in bringing the subject forward.

DR. L. J. MITCHELL

Said Dr. Jenkins had brought up a very old subject, that of using gutta percha for setting crowns and bridges. He himself had had about sixteen years' experience in the use of gutta percha, and he did not suppose in that time had set one per cent of cases with cement, and generally they had been cases he had set for somebody else. It was very exceptional for his brother or himself to use anything but gutta percha for setting bridges. With regard to gutta percha making a watertight fitting between the bridge and crown and root, that was not one of the things contended; none of the gutta percha fillings were watertight. Where there was a tendency to decay, under such conditions, gutta percha was the best thing that could be used. He had seen teeth disintegrating under amalgam and gold fillings made by the very best operators. When a stage of life was reached where there was a considerable amount of recession of gum, gutta percha would be very valuable in saving the teeth. With reference to the swelling of gutta percha and the splitting of roots, he contended that in the setting of pin crowns with gutta percha the support depended upon the fit of the pin and not on the gutta percha. There was but a very small amount of gutta percha. Where there was a hole in the root, and a pin had a large amount of play, it was possible to use a considerable amount of gutta percha, but even under those circumstances he had yet to see a root split under gutta percha alone. With regard to the dissolution of cement, the gingival margin was usually the place where cement fillings disintegrated. Nobody would put a cement filling under the gum, because it was well known that gutta percha with cement over it was the best thing that could be done in setting crowns. In proportion to the decay of the root so was gutta percha the best material. Should a certain amount of moisture get in it could be forced away with eucalyptus and pressure. In the case of decay, he used a solution of either 10 or 20 per cent of nitrate of silver in the first place and there was no repetition of the decay, but when cement was used the cement was the first thing to go. The value of gutta percha could not be overestimated. Where it was used it was possible to take off the crown with a broken face at any time in a few minutes. Many members had, no doubt, seen a bridge that had become loose at one end and it was necessary to cut up the rest in order to get the bridge off, whereas with gutta percha it could be taken off at once with a warm instrument and no trouble was experienced. It was one of the easiest and simplest methods of dealing with a troublesome matter, how troublesome might be guessed from the fact that during the last year ten or a dozen papers were read in America on the subject of difficulties met with in connection with bridges. He was sure that anybody who would take the pains to try would find that ordinary base plate gutta percha would give results quite good enough for the ordinary man. With regard to exudation round the gum, that was practically nil. If too much was put in it was only a question of wiping the remainder away, because it was the soft portion of the gutta percha that was extruded. There was an irritation round the gum with oxyphosphate, but with gutta percha and eucalyptus there was none whatever. The tight joint between the root and the crown was a very small matter compared with the preservation of the root, which was the thing that was of most importance.

Dr. Charles Rathbun

Said the paper did not point out the preservative effect of nitrate of silver, and considered that a few words from anyone who had had experience of that matter would be of value.

Dr. W. M. Cooper,

Referring to the remarks of Dr. Mitchell, said he had used gutta percha a great deal in crown and bridge work and found it a great advantage in removing crowns and bridges in case of accident, but he had not found great ease and pleasure either to himself or his patients in the handling of gutta percha. He found it far more difficult to manipulate than cement. In the case of a saddle, unless extreme care was taken, there would be trouble with the gum afterward, because the heat required for ordinary base plate gutta percha was so great as to be liable to injure the soft tissues. He agreed that gutta percha had its advantages when great care was taken in its use both with regard to moisture and with regard to heat.

Dr. S. N. Jenkins

Said he had endeavored to make clear in the paper that in crooked and obscure canals the use of a flexible instrument, such as the very finest made on the Donaldson system, was indispensable, and that by the careful use of such an instrument and of the delicate broaches he had shown it was always possible, with the use of preparations of sodium, to accomplish one's purpose. He feared he had failed in making clear the point that while gutta percha was unquestionably admissible and useful in many instances in the setting of crowns and bridges, in the desperate cases he mentioned it had to be excluded. The use of gutta percha was a question of judgment; it had great advantages, but it had also serious faults. But there was nothing at the disposal of the dentist that had not serious faults. The case to which Dr. Mitchell had referred, the difficulty of keeping roots perfectly dry, especially in the case of a complicated bridge, might be met by very carefully painting the gum about the roots with from 12 to 20 per cent solution of hydrochlor-acetic acid, and after two or three minutes the gum would remain dry for a sufficient length of time to set the most complicated bridge. It was also a matter of absolute necessity that the fit of the cap and the band should be absolutely accurate; if it were not, gutta percha or phosphate of zinc might be an unreliable basis. The adjustments to the roots should be like the adjustment of an inlay, as absolutely perfect as was an inlay in its application to the cavity.

Dr. Jenkins passed round what he termed a very insignificant little bridge, to illustrate the necessity of using in the construction of a bridge not only great accuracy, but the three alloys he had mentioned as absolutely indispensable to obtain perfect stability. With regard to the use of nitrate of silver, he thought he had included in the paper an allusion to the extreme value of bathing a crown or painting a root with nitrate of silver before setting either a crown or bridge. The manipulation of gutta percha was often a matter of such great difficulty, and it was of such importance that the bridge should be brought exactly into place, that it should not deviate by a hair's breadth from the position for which it was designed, that even where there was no other objection to gutta percha there was occasionally the serious objection of the difficulty of manipulation.

ILLINOIS STATE DENTAL SOCIETY, QUINCY, MAY 14-17, 1907.

DISCUSSION OF THE PAPER ON "ETHICS," BY DR. C. N. JOHNSON.

Dr. E. K. Blair, of Waverly:

The subject of "Ethics" so ably presented by Doctor Johnson is becoming more and more interesting as the number of dentists increases and our fields of labor draw nearer together.

Professional neighbors elbow each other daily and the opportunity to prove ones' self ethical presents at frequent intervals.

Reduced to its last analysis, ethics means correct living, honest business methods, either in professional or commercial life. The essayist has outlined very clearly the essential difference betwixt professional and commercial ethics and has very properly shown the necessity for a more rigid ethical code for the professional practitioner than for those engaged in commercial pursuits.

A close observation will disclose the fact that a large percentage of practitioners have grown ethically as well as along scientific lines.

To grow in our profession, it is necessary to mingle with the profession at large, and contact with our fellow practitioners begets respect and a desire to be friends and neighbors, conditions which are conducive to ethical growth.

It is well to have had presented to us the different articles comprising the code of ethics and to have had them carefully analyzed. We are prone to forget the exact phraseology and to wonder at times just what our fellow practitioners have a right to expect of us, and then too, a lack of familiarity with the different sections may lead us to feel that we are unduly restricted, that we are sacrificing some highly prized liberties. An intelligent conception of the code will dispel such thoughts and help us to know that in purely ethical standards we are vouchsafed comfortable contact with our neighbors and a proper and healthful growth professionally.

The greatest reward for the most difficult task performed is the knowledge that you have rendered a faithful and competent service to your patient and the next greatest reward is the certainty that your efforts will be approved and acknowledged by your fellow practitioners and when you have attained those two standards you will be living in an atmosphere ethical—the progenitors of the highest ideals—the recipients of the benefits of one of the most just moral codes applicable to men.

It is not overstating the case when we lay claim to the thought that scientific advancement will surely be accompanied by ethical professional developments. We are essentially creatures of environment.

Nothing so dwarfs a man in any walk of life as isolation; nothing so broadens him as frequent, if not constant, intercourse with those engaged in the same occupation.

A growing profession composed largely of members striving to excel, we will naturally be drawn into closer companionship such as exists in this and kindred societies.

The Illinois State Dental Society consisting of so large a membership, invading every section of the state, may readily become a potent factor in the promotion of ethical relations among the members of our profession at large.

Each member of this society should feel the great responsibility resting upon himself, and I have no doubt that by many the situation is fully appreciated.

The essayist laments the inability of any profession to guard the portals of admission so watchfully as to prevent entrance of undesirable applicants for license to practice.

This condition unfortunately is found everywhere. Only a few days since, April the 30th, referring to educational standards, Doctor Means, chairman of the judicial council of the Association of medical colleges, addressing a meeting of the American Medical Association in Chicago, is reported by the Chicago *Record-Herald* to have said that "out of the four thousand medical students graduated annually fully three thousand are incompetent."

Seventy-five per cent of the medical graduates branded as incompetent by so high an authority, with such great publicity, is appalling, and must be taken as evidence that the world is scrutinizing carefully the output of the medical schools. At the same meeting, great stress was emphasized upon the necessity of "passing upon the moral character of applicants before they should be licensed to practice." What was meant by passing upon the general moral character of an applicant before he is licensed to practice is in a measure debatable ground, upon which men may hold conflicting opinions, but I venture the prediction that in the progress of years as we turn the light of experience upon the habits of men that make for public weal or woe, some method of looking into the future of the applicant's life will suggest itself so potential in its operation that a large per cent of the unethical charlatans will die "a born-in'."

The dental profession is to be congrataulated that no such condition as Doctor Means refers to in the medical profession exists in our midst and it is to be hoped that he has been over critical of the conditions existing in his own profession, or possibly that he may have been misunderstood and incorrectly reported. We are happy in the knowledge that one of the foremost dental educators in the land has today so ably and so clearly presented the most advanced views upon dental ethics and feel that the promulgation of such high ideals here and in the lecture rooms of our colleges will yield results of great value to the profession in general.

As a profession we are the architects of our own destiny. The future comfort and happiness of this and succeeding generations will be determined by our adherence to rules of action justified by the better judgment of the most advanced thinkers of our time.

No practitioner inspired with a proper desire to enter and cooperate with the dental profession need fear our code of ethics as it now exists or as it may be formulated in the future. It will represent the consensus of opinion of the better minds of the profession and have for its aim the establishment of higher and purer ideals. As a moral code, it will in concrete form be a just expression of accumulated wisdom, equity and prudence and will carry with it neither hardship nor oppression, but will prove a safeguard to all who accept its teachings.

Dr. H. E. Davis, St. Joseph:

The essayist has given us a paper containing thoughts that are practical and useful in our everyday work, and which cannot be too forcibly emphasized, and if practiced by all, would bring about ideal conditions in dentistry.

Ethics—the science of human duty, a particular system of principles and rules concerning duty, deals with that which is due by one man to another, the science of right conduct and character, which treads the natural ground of moral obligation, and the rules which determine the conduct of one person with respect to himself and the rights of others—the science of an ideal humanity. The general definition relates to right living in any and all departments of life.

The ethical features of professional life are probably best displayed in the relations existing between practitioners. These relations are not always ideal, nor will they ever be as long as human nature continues to be what it is; and yet this fact should not discourage us from striving to approach the ideal as nearly as may be.

A good substitute for the word ethics would be that old maxim "Do unto others as you would that others should do unto you."

Instead of jealousy, bickering, "knocking" and other evil actions toward your fellow practitioner, how much more good could be accomplished by the adoption of the golden rule. Is it worth while for a doctor of dental surgery to become an Ananias and to abuse his fellow practitioner for the sake of a few dollars which he may, at the time, divert to his own pocket? Does the loss of character pay for the small gain? Besides, will he not in time be rated by the public at his real value and will not his former malicious criticism react against himself? Do the older practitioners treat the recent graduates and do the recent graduates treat the older practitioners with proper consideration? It is quite true in some instances they do, but in a number of cases they do not. How much more honorable it would be for each man to act on the square with the other and each try to help the other. The simple observance of the golden rule would bring this about in a most happy manner.

Consultations in special cases and interchange of opinions are always beneficial and should be encouraged by dentists as they are by lawyers and physicians. Professional men should not regard one another as rivals nor feel that each new claimant for practice is likely to lessen his own clientile or in any way interfere with his practice. Practitioners in the same community, instead of interfering with one another, should be helpful to each other if they are actuated by a truly ethical spirit. Time was when they stood apart and regarded each other with suspicion, but this feeling I am glad to say has almost entirely been banished by their being brought into closer relationship throuh the influence of societies. There is no reason why practitioners should not maintain the most friendly relations, and, thereby aid in making our profession an association of gentlemen of the highest type.

Dr. Kirk has said: "It is easy to be ethical if you really want to." I believe the future of our profession depends upon ethics. We must educate the young men who come into the profession as to what it is to be a professional man; that we are not working for dollars and cents alone; that while the work done is worthy of its fee, yet the fee should not be first.

The professional man possesses something (skill) which he stands ready to exercise toward another who stands in need of it, but who is necessarily ignorant of its money value. The patient does not desire to avail himself of the skill of the professional man because it will enrich him or advance his position in this world, but is driven to the necessity of obtaining it in order that he may be relieved of an ill or a discomfort. This relation between the dentist and the patient, imposes a special moral obligation upon the one exercising his skill. In many instances the patient has an idea that the dentist is a synonym of High Finance, Standard Oil, or some other equally obnoxious term. They come dreading the operation and probable expense, without a full understanding of the time consumed in acquiring the necessary knowledge and manipulative ability to do the work skilfully and with thoroughness. Thus when we have spent what seems to them a short or long time, according to the pain endured, in doing a certain operation and ask a reasonable fee for our services, we are immediately classed with brigands or some other characters. The cause of this is probably the low prices of the inefficient, careless practitioner or by reading certain advertisements in newspapers wherein ridiculously low prices are named for certain work.

Dr. Essig says: "Every dentist owes something to his profession, which freely lays its treasures at his feet; and if he is not endowed with sufficient self respect to avoid practices which will dishonor him, he should be compelled to respect that profession whose sheltering wings include him in their fold, and whose fair name may be smirched by every mean act of his professional life."

There is nothing in the code that calls for any sacrifice on the part of any practitioner who wishes to be known as a reputable professional man. It does ask you to labor earnestly for your profession, and to maintain its honor, to be honest with yourself and your patients; and you are asked to be charitable in your remarks when passing judgment on the work of your brother practitioner, and to live in a manly, honest way.

Our code is a living law and should be respected, its provisions observed, its violations recognized, and its penalties in some way enforced. Let us take our code of ethics and as far as human frailty will allow—follow it.

Dr. C. E. Bentley, Chicago:

I think that a paper on ethics should be read before this society at least once a year. I have insisted upon that in the Chicago Odontographic Society, for it is a subject which in this commercial age needs to be kept before the younger men and some of the older men all the time. We are liable to be diverted, in our chase after the almighty dollar, and prompted to violate and disregard some of the noble things we have had inculcated in our younger life and some of the things to which we subscribe in the code of ethics.

Ethics is a very broad subject. I like the definition of the last speaker, possibly because it implies a responsibility. He said the definition of ethics was the "Science of Human Duty." As I intimated, the science of ethics is a profound and broad one; it is one of evolution. Herbert Spencer, in his "Data of Ethics," discusses ethical relations, and the sense of justice between tribes, something like this. As society became more complex and as civilization advanced, there was a tribunal established by which power was vested in the authorities to the extent that they should say whose lives should be taken instead of every man avenging his own wrongs. In course of time, the sense of justice became so thoroughly ingrained in the rank and file of the tribes that by and by it began to bear fruit, and that was the beginning of justice in civilization, and of ethics in human society. The essayist has seen fit to bring this large subject down to a special use, namely, the code of ethics as it affects us as a group of people. This code, as it is illustrated by Herbert Spencer, has been crystallized into the fundamental principle that the "liberty of each is limited only by the like liberties of all." In other words, a man may do what he wills, provided he inflicts no injustice upon others. This is the crux of the sense of justice, and is the fundamental principle of ethics. It is also enunciated, as the last speaker has said, in the golden rule, "Do unto others as you would have them do unto you." This is a sufficient code for the government of any group of people. The reason a code is necessary in law is that all men will not be governed by that fundamental rule. Many of us are striving for that ideal or absolute condition of dental ethics where every man and every woman will be so ethical that there need not be any code. But that is a far-off dream. We must exist in a relative condition, and must be guided by law, which has been specifically read to you by the essayist. Don't you know that commercial men have commenced to see that this law of liberty to each is limited by the like liberties of all, is a good business principle? The gentlemen who are from Chicago will bear me out in the assertion I am going to make. Marshall Field introduced a system of fair dealing with his patrons to such an extent that it is a pleasure to buy goods in Marshall Field's store. He inculcated in commercial circles an ethical sense that was unknown until he developed it to the standard attained before he died. The result has been that a sentiment has been created in Chicago in a commercial way among the larger houses which requires men to give a fair return for the money paid. That spirit of ethics is spreading in commercial affairs, and how much more should it be emphasized in professional affairs?

Speaking of the difference between commercialism and professionalism, I happen to have with me something which I think more clearly demonstrates my idea of the difference between a profession and a trade than anything I have ever read, and if you will bear with me I will read it to you. It comes from the president of Brown University. He says: "A trade is an occupation for a livelihood; a profession is an occupation for service to the world. Trade is an occupation for joy in the results; profession is an occupation for joy in the process. Trade is an occupation where anybody may enter. A profession is an occupation where only those who are prepared may enter. Trade is an occupation taken up temporarily until something better offers; a profession is an occupation with which one is identified for life. A trade makes one a rival before that trade; a profession makes one a co-operator with his colleagues. Trade knows only the ethics of success; a profession is bound up in the ties of sacred honor. But let us not forget," he says, "in the practice of our chosen and beloved profession, that many a trade has been made a profession by the proper application of the golden rule in the routine of daily work."

Dr. Edmund Noyes, Chicago:

I congratulate the society and the essayist upon a paper with such clear definitions, such an earnest appeal, and expressing such elevated sentiments. A few things seem to me worth while to be said in addition. We hear very much discussed in dental societies the question as to whether any written code of ethics is desirable or necessary, and the statement has been made here that the golden rule, "do unto others as you would that they should do to you," is a sufficient code of ethics. This is sufficient as a fundamental principle, as foundation of character and conduct; but not sufficient for instruction in the details of conduct. It is not sufficient guide to professional ethics, in that it is just as binding in commercial as in professional life. It is binding on men as men, and not because they are business men, manufacturers, or any other sort of men, but simply because they are men in society.

All men in the beginning, and most men for a long time, need instruction as to what constitutes conduct which will correspond to this fundamental rule. Such instruction is embodied in codes of ethics, in principles of commercial probity, in the maxims and motives and ideas, as expressed in language which guides the conduct of men and their affairs. It is desirable that they should be expressed definitely and in terms which may be recognized by great masses of men as authoritative, and as embodying the consensus of general opinion.

The medical code of ethics in a good many particulars, in its present form, to some extent in its present phraseology, is about one hundred years old, and, it seems to me, that the medical profession and the dental profession, owe a very great deal to the fact that this code of ethics was not content with a few broad statements, or a brief exposition of fundamental ideas, but it was formulated in respect to the details of conduct and the standards and habits of the medical profession, and who shall say to what extent the dental and the medical professions have been benefited by having regarded these enunciations for a hundred years as the unchallenged expressions of professional duty? It seems to me, sometimes, it would have been to the advantage of the dental profession if the framers of our first code of ethics had to a greater extent followed the models of the medical code and had made it more ample and more specific, and covering a wider range of duties and conduct.

Reference was made in the essay incidentally to the rules of codes of ethics, and generally of human laws, as restraints and limitations upon human liberty. I wish that you would think of law and liberty in a little different relation, and realize that there is no such thing as human freedom except in obedience to law, and that disobedience to law always curtails, diminishes human freedom, and you may apply that principle from lowest to highest. The freedom of your digestive apparatus is conditioned absolutely upon your obedience and observance of the laws of nutrition, and the physical laws which surround us on every hand are not for the purpose of limiting freedom, but for the purpose of preserving our lives. The same thing is true when we go into the moral and spiritual realm, only the law is less clearly understood; the limitations of freedom are perhaps less speedily executed. This is expressed pretty well by one of the old proverb makers in one of his pessimistic moods, when he said, "Because sentence against an evil work is not executed speedily, therefore the hearts of the children of men are fully set in them to do evil." But that does not prevent the fact that the transgression of the law destroys freedom in the end.

I want to say a word or two in regard to that particular part of the code of ethics which has been referred to here in speaking of the duties of practitioners toward each other, from the side of the man who is tempted to do injustice, to speak evil falsely of his neighboring practitioner. The real difficulty in professional treatment is not there, but in the cases when to your mind, honestly looking at the question before you, it seems to you that the upholding and commendation of your neighboring practitioner must be done at the expense of your patient's welfare. These are the cases of real difficulty, and while I hold as a fundamental proposition of professional ethics that the welfare of the patients committed to our care is the first obligation, to which every other obligation must yield, yet this can always be accomplished with kind, charitable treatment of our neighboring practitioner. Do not forget one thing, that the disparagement of your neighboring practitioner may do the patient more harm by the distrust that will be planted in his mind in regard to professional service generally than any good that can be done to him. Do not forget that things which seem to you grossly incompetent or negligent may not have seemed so at all to the man who did the work; it may not have been so under the circumstances in which the work had to be done. It is almost invariably possible to protect the interests of patients to the utmost extent, and, at the same time, to uphold the other man in the estimation of the patient. There are many ways in which matters may be explained or accounted for, or justified. There is not one of us who is in danger of being too careful or too kind in respect to the good name and reputation of our fellow practitioners.

Dr. F. C. Jones, of Greenville:

I remember once in my career of hearing the code of ethics read by Dr. George E. Hunt. Since then I have not read it. The one thing I have noticed in particular has been the uprightness of men in the dental profession. However, if the code of ethics was read more frequently, I think we would have a clearer and better understanding of its principles. The members of the Illinois State Dental Society, and the component societies are men to whom we can look for advice and for right-doing; yet if we were to ask many of these men about the code of ethics, I venture to say that we would find it has been years since they have read it, yet the spirit of uprightness and quality of morality are manifested. It has often been said, and you have read it, "Be ye kind to one another, kind-hearted and firm." If we had more of that spirit in us, the code of ethics as a written law would not bind us. A law that binds anybody hurts the spirit of the man for the time being. If we would live more of this life of ethics in our everyday lives, it would not be necessary for us to have it taught us as a written law.

Dr. G. W. **Dittmar**, of Chicago:

What I want to bring out in particular is regarding this little pamphlet entitled "Medical Ethics." It is published by the American Medical Association. It is a booklet of twenty-eight pages. Among the headings are these: "Duties of Physicians to Their Patients"; "Duties of Physicians to each Other and the Profession at Large." Another heading is "Duties of the Profession to the Public." These subjects are discussed at considerable length. This little book is given to medical colleges for medical students when they graduate. If a similar pamphlet on "Dental Ethics" could be placed in the hands of every dentist and dental student, it would give them a better idea of ethics. Many of us do not clearly understand ethics. If the finances of the Illinois State Dental Society were such that it could afford to print and furnish such pamphlets to our dentists and the colleges it would be a fine thing, and I believe would be a step in the right direction.

Dr. C. C. **Meade**, Carmi:

I want to ask the essayist one question. We have some men in the dental profession who are outside of the fold, and we can not get them in. What shall we do?

Dr. **Edmund Noyes**, Chicago:

I want to say, in reference to what Doctor Dittmar has just said, that it has been my custom for many years to require the students of the Northwestern University Dental School, in which I lecture on ethics, to procure this little book on medical ethics, and I have had printed for them the code of dental ethics of the same size, with gum edge, and have required all students to procure a copy of dental and medical ethics in that form, and be prepared for their final examination upon ethics in regard to any question I might ask on either of those codes.

Dr. E. H. **Allen**, Freeport:

I do not recollect any cases brought before the Committee on Infractions of the Code of Ethics but those that were directed to the sin of advertising. A man, for example, advertises in a notorious way by calling attention to the superiority of his methods, which arouses our indignation, and he is hauled over the coals. But we should not lose sight of the feature of brotherly love that is fairly defined in the code of ethics. I don't think we would hesitate a moment to vote to receive a man into our society if he was the right kind of advertiser. I should expect him to quit unethical advertising. The greatest point in the code of ethics is that fraternal spirit to be shown by one toward the other, and not misconstrue the golden rule, as David Harum did, when he said, "Do unto the other fellow as he would like to do unto you, but do it fust."

Dr. Johnson (closing the discussion):

I am not quite clear as to what the question asked by Dr. Meade involves. As I understand it, he asked my opinion of what we should do with a man who is unethical outside of the society. Is that the question?

Dr. Meade: A man who is considered ethical, yet outside of the society.

Dr. Johnson: I would try to get him into the society. There are many ways of doing that. You can not treat all people alike and get the same results. I believe, if I started out to induce a man to join a society, I would, as was intimated this afternoon, probably put my arm around him and claim him as my brother and influence him in that way. I might not succeed, but I believe that method is more successful than any attempts to drive him in. These men have their points of view and we should recognize them. We can not force men into societies; neither can we force men to be ethical. It is all a matter of education, and the higher the life we live ourselves, the better we can educate others to lead a proper life. It is largely a matter of example on the part of those who are in societies themselves.

DISCUSSION OF DR. LOURIE'S PAPER, "SOME COMMON MISTAKES IN ORTHODONTIA."

Dr. Grafton Munroe, Springfield:

Just so surely as science is classified knowledge, just so surely is Dr. Lourie a scientist. As figures do not lie so likewise do not his pictures, for they can be backed up by models true to nature, with no evidences of perversion of form.

Could the general practitioner of dentistry have constantly before him the inter-dependence of one arch of the dental armament upon the other, he would be less liable to do so much thoughtless extracting of the deciduous teeth, but would use every means and effort to maintain those members even down to their badly carious roots, and when they are lost per force of necessity then employ some means of preserving the space for the on-coming permanent tooth. The maxim of "training up a child in the way he should go" might be well applied to the care of the deciduous teeth in their relation to the permanent ones.

Dr. Bogue, in his paper "Theories Made Facts," makes plain the manner in which the course of the permanent teeth in their eruption, is directed by the roots of the deciduous ones. Could the physician be brought to appreciate the damage he does by advising the delay of a visit to the dentist for the proper guidance in orthodontic matters—both he and the incompetent dentist would cease their advice to let nature go unassisted.

Just as likely is strabismus or astigmatism to be corrected unaided by the direction of the oculist's lenses. Of course there are conditions of health that justify delay in the matter of preventive dentistry, but, at as early a period as five years the child is not too young to commence, at least, the preventive measures. The development of pathological conditions requiring the help of the rhinologist generally occurs between the ages of five and twelve, and by the time of the latter age much havoc could be wrought upon a first molar, upon which so much depends for the proper mesio-distal relations of the jaws. I am sure Dr. Lourie can be consulted about the appliances he would use in many of the cases which he has so beautifully shown us and I can warrant you that the simplicity of these will often surprise you and make you more ready to adopt these early methods of preventive dentistry.

Dr. Fred B. Noyes, Chicago:

This paper is very complete in itself, and I want to thank the essayist for the clear way in which he has presented the subject. The pictures he has shown illustrate in a striking way the importance of recognizing these conditions in young patients. We do not study carefully enough the occlusal relation of the first molars. I might emphasize in a few words the facts that were presented last year by Dr. Monroe. The first permanent molar is the key which preserves the normal relation between the upper and lower jaws in the whole period of loss and replacement of the temporary denture. We need only to examine a child about six or seven years of age to find that the first permanent molar comes into position and into full occlusion just about the time that the lower temporary incisors are lost. In other words, the cusps of these four teeth interlock, which preserves the normal mesio-distal relations of the jaws during the time the temporary teeth will one by one be lost and replaced by the permanent ones. If these first permanent molars are so carious that their cusps are lost, there is nothing to determine the mesio-distal relations of the jaws and they close in any way, and probably under the normal tendency of the lower jaw to slide forward an abnormal relationship is established. This may even happen without the loss of these teeth. Suppose one of the four becomes carious to such an extent that it is painful to bite on, the little patient will close his teeth so as not to hurt that tooth, and will acquire the habit of abnormal occlusion, sometimes throwing it to one side, and in that way producing a distortion of the arch on one side and not upon the other. This serves to illustrate the manner in which the first permanent molar becomes a key to the normal relationship of the jaws during that period. If that is true, it becomes the duty of every general practitioner in his examination of every child's mouth to note among the first things whether the first permanent molars are in normal occlusion. If they are not, the child needs either his assistance or the assistance of an orthodontist at once, because we have every reason to believe that if they are allowed to remain in abnormal occlusion there will be more and more complications as the permanent teeth erupt, while, if they are restored to their normal occlusion, the occlusion of the permanent teeth as they erupt will probably be more nearly correct.

I would like very much to be able to emphasize the structural conditions which probably result from the loss of one of the temporary teeth before it should have been lost. Some time ago I expressed the opinion that the development of the jaw expresses the sum total of all the forces which act upon it, including the forces of all the muscles attached to the surfaces of the bone, the forces necessary for the growth of the tongue, and the pressure of the tongue to the lingual surfaces of the teeth, the forces of eruption of the permanent teeth, and the atmospheric pressure when the mouth is closed which increases the pressure of lips and cheeks. It requires a perfect balance of all of those forces to obtain a perfectly normal result. If you remove one of the points of leverage, you have thrown all of the forces out of balance. We need only to examine or to dissect a skull to find how in the development of the lower cuspids their roots push downward through the cancellous bone until they come in contact with more solid bone, and then the resistance becomes greater than that of the temporary teeth above so that the growth of the tooth pushes the temporary cuspid upward. In other words, as long as there is less resistance in the cancellous bone below the root, the growth is downward, and as soon as it reaches sufficient resistance from below it begins to push the temporary cuspid upward. If that temporary cuspid is gone, it has nothing to push against, and consequently the normal increase in size of the jaw is lost because the fulcrum is gone. The bone grows under the influence of the forces which act upon it. That is a principle we may make use of in our treatment. When a force has been omitted, you supply that force, and in that sense orthodontia in its fullest scope and proper field aids nature, and does not interfere with it. And the idea the essayist presented was that this assistance could be given at a time when it will be received to the best advantage. It needs no argument to establish the validity of the notion that it is better to allow or assist the teeth to come into normal position and build a normal alveolar process the first time than it is to allow abnormal conditions to build an abnormal alveolar process, and then tear that down and build a new one.

I want to emphasize also the statement of the essayist in regard to excessive force and too rapid movement. He said it was a great mistake to be in a hurry for results, and if I remember correctly, he said, that often by being slow at the start and apparently taking a great deal of time, in the end the movement would be more rapid and the case would really be completed as quickly as it would have been if it had been done more rapidly at first, and then you were obliged to slow up because of the pain produced. I want you to get that point clearly fixed in your minds, as it is an important one. It is this: If light pressure, comparatively, is used at first, the teeth will begin to move more and more rapidly without pain; while if you put on too much pressure at first, you will have to slow your motion because of the pain. You need only to study the structure of the tissues concerned to be convinced that heavy pressure seriously affects the circulation of some parts of the tissues. That results in a disturbance of cell metabolism in the areas affected, and as a result of that modified cell metabolism you probably have more or less poison produced. As a result of that you have inflammation, which interferes with the physiological action that you want because the normal function of the cells is interfered with.

The essayist said also that in the cases where the teeth were moved rapidly longer retention was necessary. When the movement is accomplished in the bone, I think we have had too much the notion that the absorption removes the bone on one side and builds it up on the other, and the root moves along in the bone in that sort of way. I do not believe it does that. If you study the structure of that bone, you will find there is a comparatively dense layer around the root, and there is a considerable area of cancellous bone, spongy bone and then it becomes solid as the labial or lingual plates of the jaw. When you put a comparatively light pressure on these teeth, where does absorption occur? On the alveolar process next to the peridental membrane? It occurs in all spaces in that cancellous bone cutting down the walls of the spaces, increasing the area of all these spaces that are filled with soft tissue, until the spicules of bone have been enough reduced in size to have them bend under the force. If you have heavy pressure on that tooth, you will bend the spicules of bone while they are larger and their tension, which is like a bent bow, will last longer and require a retaining appliance for a longer time. I sometimes feel that orthodontists are in a certain sense the prettiest surgeons, for they cut away tissue with nature's knives. They assist the osteoclast, the tissue-destroying cell, to cut away the tissue they do not want and let the other cells build in the new tissue in the places they do want it. They are surgeons without a knife in that sense. You can see very readily, then, from the picture I have tried to draw, why it is that if you keep up the light pressure for a considerable time you have gotten the cancellous spaces all enlarged around that tooth and it will begin to move faster and faster without inflammation, because its resistance is cut down, and in the end you may, while making very rapid movements, produce no soreness of those tissues.

I think from the presentation made by the essayist, we cannot help feeling that a large number of complicated cases could have been prevented if somebody had noticed them in time. Every little while some one comes to me and says he has been advised to wait until the patient is twelve or fourteen years old before anything is done. Usually that is a mistake. I recall one case in which I had to contend with that difficulty. After I had gotten the thing started, the dentist who happened to live in the same town, got the people all stirred up, because, he thought, nobody ought to undertake the treatment of that case so soon. There is that feeling which is very strong in the profession, and it needs to be considered very carefully.

Dr. E. L. Burroughs, Edwardsville:

The paper under discussion is a very interesting one to me, and should be to the general practitioner, more so I think than it is.

Speaking as a rural practitioner, if we ignore this phase of dentistry, we are making a two-fold mistake, first a failure to do our own duty, and second, a failure to do unto others as we would have others do unto us.

You say to me in reply, the public will not compensate us for the trouble. I sincerely beg to differ with you. There are many people throughout the country districts who will gladly pay you a reasonable fee sooner than to pay a much larger fee to some specialist and railroad fare besides. Be modest in your expectations, and do not require a specialist fee when you are not able to render a specialist's service.

May I ask you the question, how many dentists there are who in diagnosing a set of teeth for a young patient fall into that old habit of searching for caries, but never, no never, ask the patient to close the teeth that they might study the occlusion to see if dentition be proceeding in a normal or abnormal condition. I venture the assertion that there are many practicing dentistry today who do not know the correct relation of a full set of teeth in normal occlusion. It matters not to me whether you take up malocclusion after all harm and injury have been done to the patient, but it is your bounden duty to assist nature, by laying the corner stone, so to speak, for normal occlusion, viz.: see to it that the first permanent molars of your young patients are in normal occlusion, advising the parents of abnormal conditions where they arise, and of resulting conditions which must follow if the case is neglected.

How often have many of us made the common mistake of diagnosing prominent cuspids, a condition so often seen in young patients, and which as a matter of fact, as your essayist has proven to you tonight with his slides, is only malocclusion with a contracted arch and retrusion of the incisors, and the cuspids in their proper places.

Another common mistake by the profession in general is a lack of appreciation of the diminution of caries in those mouths where the principles of orthodontia have been put into practice. For example take two superior central incisors overlapping each other, and compare the point of contact with two such teeth in their normal relation, and see how you have increased the liability to caries.

Dr. G. V. Black, Chicago:

The evidence goes further and further to show that the general practitioners must look out for these children. They have the first opportunity to diagnose these conditions. Furthermore, much of the trouble comes from the too early loss of the temporary molars. The first permanent molar, which moves forward on account of the loss of these temporary teeth, makes the trouble. Mind you, it is the loss of these temporary teeth. Now, it is your business, young men, to see to it that the mesio-distal breadth of these teeth is maintained. That is not the duty of the orthodontist, but it is the duty of the general practitioner, and in this way we will enable the first molars to develop properly, the bones to develop properly, and we will have no irregularity, or if an irregularity develops, the ability to tell it quickly is yours. The case probably should never go into the hands of the specialist. I was guilty myself of correcting a good many of these cases for these little patients, and the time to begin to preach to the parents and begin to warn them of trouble is when we find these temporary teeth decayed. Not so much difference about the temporary incisors, in this relation they are not so important; for we find them spreading apart by the growth of the bones before the shedding process begins. But the temporary molars are the crucial point. Those are the teeth we must protect in their integrity, for just as sure as we do not, the first molar will move forward unless there is an interlocking of its cusps with the upper or lower, whichever it may be, holding that in position by a tooth that is not decayed.

I was particularly pleased with one side of the discussion this evening, in regard to a tooth that is decayed so that it hurts in chewing, and twisting and moving the jaws in chewing food to prevent pain. I was reminded of one case that came to me many years ago, where I found a cross-bite almost of the width of the incisor. In looking over the case the first thing to do was to prevent that pain, which was readily done. The next thing to do was to move the cross-bite back, and the whole thing was accomplished in a week.

These cases occur, and if we can get at them promptly in the little folks we are able to accomplish much.

Now gentlemen, the duty that each of us owes to those who depend upon us is to educate the people, not by sending out printed matter, but by good, judicious, careful talks to the parents of the children who come to our offices, and in this way we will get the assistance of the public to a greater degree than we have in the management of these little ones. It is in that way we will finally come to the point at which we can handle them more judiciously, more perfectly, and with the best results.

Dr. George W. Haskins, Chicago:

Many busy dentists do not like to take up this phase of dental work. They do not like to have little ones come into their offices and be bothered with them, but the best way is to catch them when they are young, say six years of age or under, and then one can accomplish in a short time more than he could accomplish in six months if done years later.

There are many cases of retrusion of the lower jaw which, if caught at an early age when the first permanent molar is coming, can be remedied easily and the features restored to their normal condition so perfectly afterward, that by all manner of means we should take hold of these cases then. It requires nothing more, usually, than the application of plates on the lower or upper teeth which will compel the child to bite in normal occlusion. After the first week or ten days, the child goes along eating and playing freely, regardless of anything in the mouth in the way of an apparatus to correct the irregularity. By the time permanent teeth have come in, the artificial obstruction that was placed on the molars may be removed; the angle of the jaw has been changed; the habit of the child is changed, so that we will have now the normal occlusion.

I have quite a number of little patients, all boys, whom I have treated, and I do not know whether I have done wrong or not. I have given each of these boys that chin which we all need to get along with in this world. They came to me with receding chins. Whether I have changed the moral character of these children or not, I do not know. But they have got chins. I want to ask Dr. Noyes a question. It is easy to understand the pathological or histological changes (whichever expression will apply best) in a bone when the tooth is moving. There are cases in which the explanation of Dr. Noyes was not satisfactory. I can not do any better in illustrating this than by citing a case in my own practice.

A man, 35 years of age, wanted a retrusion in the upper incisor corrected, and it was very essential that this be done. We did it. I moved the roots and all. They were pusheed forward one-quarter of an inch. When finished, the anterior aspect of the root was farther forward than the gum covering these roots when we started. It is easy enough to understand why the cancellous structure of the bond moved forward with it, but how did the hard alveolar plate move forward?

Dr. Conroy, Belleville:

Before Dr. Noyes answers the question asked by Dr. Haskins, I wish to make a few remarks, and also ask him a question.

For the past seven years I have devoted about one-third of my time to the practice of orthodontia. When I went to school I asked the professor of orthodontia (Dr. Angle) what was the proper time for commencing to treat these little ones. He replied, "Any time between six and sixty." According to Dr. Lourie, I am going to move that back two years, and start at the age of four, if I can get the patients. I have two patients waiting to be treated. My advice in his regard may be wrong, they are both between the ages of five and six. I think I am right in regard to one of them. The contention does not always follow that if the deciduous teeth are in abnormal occlusion, the permanent teeth will naturally follow. In this case they do not. The child will be six years of age in October. The lower first permanent molars are partly erupted, and they are coming about one-eighth of an inch buccally to the deciduous teeth. The upper tooth occludes lingually to the lower, and there is pronounced protrusion of the six anterior teeth. In this case I think I shall follow out my first intention of waiting for the eruption of the first permanent molars. That is the period at which I have usually commenced.

As to the pain caused by the movement of teeth, I have been unable so far to commence a case of orthodontia with a patient ranging from the age of sixteen to twenty-five without causing considerable pain for the first ten days or thereabouts. I can treat the teeth of children without causing pain, but can not do so with adults in doing orthodontic work.

As to the general practitioner not being familiar with orthodontia, there seems to be absolutely no excuse for his not knowing something about this subject, particularly if he has graduated within the last ten years. He sees these children first, and should make it his duty to start them right. It is to the general practitioner that these little ones come. You gentlemen who live hundreds of miles away from specialists must take up some form of orthodontia, and help to straighten the teeth of children; put them in occlusion. You have got to study occlusion. You have been taught it, yet I doubt if there are many of you who can give a correct definition of the word occlusion.

In regard to the remarks of Dr. Noyes, I did not quite understand what he meant. I understood him to say that when a tooth was moved, it is the cancellous bone that yields and not the heavy plate of bone directly in contact with the tooth. In the rotation of a tooth my understanding is that the round or cone-shaped roots cause practically no disturbance of the bone at all.

In closing I wish to say that we should advise the parents of these children not to wait, but to bring them to us as soon as they can. I thought I was getting them at a tender age, but now I find I have not been getting them early enough.

Dr. Fred B. Noyes, Chicago:

I shall only take a minute or two to try and answer the questions that have been asked.

In the first place, as to the labial plate of bone, which is moved forward, I should say there was no doubt there was the formation of bone in that plate all the way out during movement. Does that answer your question, Dr. Haskins?

Dr. Haskins:

If you move the labial plate or the six incisors forward, you lose one-quarter of an inch on the side or form new bone.

Dr. Noyes:

You must have new bone.

Dr. Haskins:

But you have no periosteum to form it.

Dr. Noyes:

You have periosteum to every bone to form it.

Dr. Conroy asked in regard to the rotation of the teeth. In the rotation of the teeth there is very little absorption of bone. The bone to which the fibres are attached is bent.

Dr. Lourie (closing the discussion):

I feel complimented by the fine explanations that have been made by those who have discussed the paper. It is evident that my points were understood. I simply want to suggest the practical application of the paper. The general practitioner can give many of these young patients all the orthodontic treatment they need, if seen early, even if he does not feel qualified to treat the older or difficult cases. If there should be doubt as to the necessity for early treatment, it would be wise to take impressions of these young cases, and in that way you can tell, from time to time, whether they are improving or not.

EXPRESSION OF REGRET.

DR. W. D. MILLER.

Whereas our honored and beloved fellow-member, Dr. Willoughby Dayton Miller, has been suddenly removed by death, the officers and the executive committee of The American Dental Society of Europe desire immediately to express to his afflicted family and to the dental profession the sympathy and the deep sense of personal bereavement which every member of our society feels in this irremediable loss.

H. A. Davenport, President.
J. W. Gale, Secretary.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States, its possessions and Cuba and Mexico. Canada, $1.40. All other countries $1.75 a year.

EDITORIAL.

BOIL IT DOWN.

This is a word to essayists. During the autumn and winter months most of the papers for local and district societies are written, read and published. Many of the manuscripts turned in for publication could be cut one-third, or in some instances one-half, to their great advantage. But the editor can not do this for two reasons. One is that if he did he would have no time to do anything else, and the other is that it would raise a howl on the part of the essayist. And, let the truth be told, the editor is not always capable of doing this as it should be done, no matter how able or well-informed he may be. No one has sufficient insight to invariably judge of the precise points in any article which the writer most wishes emphasized. The man to cut the article is the one who writes it, and it is this kind of training that our dental writers really need.

Not all of them, of course. Some articles are short, sharp and precise as to statements of fact, and it is these articles that are read, copied and reread. But the long-winded ones—these are the bane of the listener, the editor, and the reader. Not that all articles must necessarily be short. If an author is treating exhaustively of any subject it may be necessary to make a lengthy article, but the phraseology should be clear cut and with little or no repetition of statement.

To write precisely one must think precisely, and this is the keynote of the whole matter. When a subject is selected for an essay the author should think, and think, and think upon that subject. If when he writes out his thoughts he finds that his article is running into too many words let him go mercilessly—or mercifully—at it and trim it of all useless verbiage. If it seems impossible to cut it at first reading, lay the manuscript aside for a week or two—longer if possible—and then pick it up with a new point of view, that of the reader, and see how many useless words may be found.

It is astonishing how much the average essay may be cut by judicious pruning in this way, to its great betterment. And this kind of practice improves the reasoning faculties of men and makes them better thinkers, and the better thinkers they are the better dentists, and the better dentists the better men.

It has often been said and truly that the one to get the greatest benefit from an essay is the man who writes it. The reason for this is the concentration of thought necessary to write upon a subject. After all thinking is the lever which raises the man above the brute, and the reason that some men are not much better than brutes is due to the fact that they are not good thinkers. Train yourself to think well and you will write better articles—and shorter ones.

THE EDITOR'S DESK.

JUST ANOTHER ONE.

[Continued from September Dental Review.]

AT ESTHER ISLAND.

The moment the outline of the cottage "The Pines" came into view as we were nearing Esther Island I began to feel at home. When the boat touched the dock I ran up to the cottage, pulled off my coat and put on one of Dr. Cunningham's old hats and proceeded to browse around in perfect contentment. Things were much the same as the year before except for some improvements in the way of underbrushing and general clearing up. I found Jimmy the Scotchman there in charge of the island as usual, and remembering the delightful way in which Jimmy looked after us last summer, I was naturally delighted to see him. The only change in the personnel at the island was the dog. The little black spaniel Sailor had become mixed up in a porcupine fight and accumulated so many quills that he had to be killed to end his troubles. In his place was a——well, I don't know the breed of the dog, but his name was "Caesar." Caesar was a combination dog. He was about the size and shape of a tiger, the color of a lion, with a cast of countenance like an Irish terrier, and a hair cut similar to that of a country school boy whose mother had clipped it with a pair of dull sheep shears. He was so monstrously homely that he was positively beautiful to look upon. I tried hard to get a snapshot of Caesar, but he shied the camera like a modest maiden, and all I have of him is a memory. I know Caesar was a good dog—he must have been—because all living creatures have some one thing to recommend them to our consideration, and Caesar was left out when appearance was passed around.

THE HERMES.

After dinner Dr. Cunningham said it was a little early to go fishing, the best time being between four and six o'clock, but the Veteran complained of wasting so much valuable time. He was impatient to get his line in the water and see if all the stories he had heard of this region were true, so the doctor, after badgering him a bit, got out the "Hermes" and, towing the dinghy, we started for a certain channel between two islands about a mile distant. The channel was shallow in places, so we anchored the "Hermes" outside and went in with the dinghy. The doctor placed the Veteran on a flat rock and told him to cast his line. It wasn't long before a racket in the water showed us that something was doing, and after as beautiful a contest as one wishes to see a black bass was lifted ashore. "That's worth the entire trip up here," exclaimed the Veteran, as Jimmy was taking off the fish and stringing it on a branch. We soon caught enough for a mess and then stopped, as is the rule with all good fishermen. No true sportsman will ever catch a single fish more than can be eaten, nor kill a wild animal that cannot be utilized, which, by the way, calls to mind the wanton destruction of game in this region by people coming in from the outside.

There is of course some violation of the law by the natives, who occasionally kill a deer out of season for the venison, but this is a mere bagatelle to the cruel waste by fancy hunters who come from a distance and go slaughtering about for the mere brutal love of killing. It is common during certain seasons of the year to find in the woods a deer lying where it was shot with nothing but the hind quarters cut out for a tasty bit and the rest of the carcass left to rot. One man found no less than fourteen of these carcasses during a single trip up the shore above Parry Sound, which is a state of affairs sufficient to make every honest man and good sportsman rise up in a body and clamor for a rigid enforcement of the law. Dr. Cunningham told me of finding 'at one time three dead moose, a bull, cow, and calf, with nothing but a steak cut from one of them—evidence on the part of the man who shot them of a sheer lust for blood. There is game enough in this region to supply the settlers and Indians with fresh meat in plenty, and to afford the occasional hunter ample opportunity for sport, but the bestial practices just referred to are calculated not only to raise the wrath of the native population but to eventually result in extinction of the game.

That night we had a black bass supper cooked as only Mrs. Cunningham knows how, and, ladies and gentlemen, if you can imagine anything better than that after a day in the open air of Georgian Bay, then I have yet to hear of it. The Veteran elected to sleep in a tent to remind him of his old hunting days, and such sleep as one gets up on those islands is worth traveling hundreds of miles to obtain. But I am never able to sleep late in the morning when all nature is calling me to the féte, and so I was out of bed at five and had the exquisite pleasure of seeing the sun rise over a distant island. The birds were singing, the waves were lapping the shore and nature at her very best. In a short time the Veteran and Jimmy came down to the dock where I was sitting and suggested that we row across to another island where a bluff of rocks hung over the water. It was the same place where Jimmy and I caught some big bass the year before, and I was glad to visit the spot again. We had some of the fish caught the previous day and so could not allow ourselves to take many that morning. But we compromised on one apiece and they were three beauties.

After breakfast Jimmy took the Veteran in the rowboat, and Lorne and I launched the canoe and the four of us went over to the mainland to pick blueberries. I had never indulged in this pastime till now and I will draw lots with anyone to be rubbed over a nutmeg grater before I pick blueberries again.

It is a constant scramble over the rocks with more holes worn through your hide than mother nature can patch up in a month. The bushes are about "so high," which means that you either have to grovel along the surface of the earth to get the berries or else stoop over at an angle of about 389 degrees. The Veteran and Jim seemed to enjoy it, but Lorne was with me in sentiment to the crack o' doom. Our interest in the occupation was heightened by the presence of some snakes. I was sitting on a small log gathering in the "blue pearls" with Lorne at my back when suddenly I heard a commotion behind me and, turning, I saw Lorne dancing some kind of a jig among the bushes. "What's the matter, Lorne?" I asked. "Oh, it's nothing but a snake," he said, "and he has got away. I'd enjoy picking berries around here a heap better if that chap was killed. I wouldn't object so much to snakes if it wasn't for their bloomin' curiosity, but they're always nosing around to see what a fellow is doing."

There is only one redeeming feature about picking blueberries on the rocks. They are a little bit sweeter when fresh from the bushes than under any other circumstances. You naturally taste one just to see how they are, and you are positive that that is the sweetest berry in the patch. Of course to test the matter you taste another and find that sweeter yet, so you go on till you have eaten a peck or two, which is one of the very best things in the world to give you an appetite for your dinner. That is one peculiarity about blueberries. You can eat your fill apparently and in a few minutes they seem to have evaporated and you can eat as many more. But the air of this region keeps you hungry all the time, anyhow. After that forenoon on the rocks I came back to "The Pines" and said to Dr. Cunningham, "You remember all that bass I ate for breakfast?"

"Yes."

"And the potatoes and gravy?"

"Yep."

"And the bread and butter and other things?"

"Surely."

"And the blueberries and cream; you recall that you had to help me the second time to blueberries?"

"I do."

"Well—I'm *hungry.*"

"Got to hustle for enough to eat up in this country," he said, with a laugh. "The fish will last us for dinner today, but we'll have to catch some more this afternoon, and," he added, "the weather looks as if it would be a good time for bass."

That day at dinner, after having dispatched one good-sized bass, I calmly passed back my plate for more fish. Dr. Cunningham chuckled quietly, but the Veteran, who was sitting opposite me, threw up his hands in astonishment and scruitinized me carefully, as if he thought I might have tapeworm. In all the forty-seven years that he has known me he never saw me eat like that before. But the second bass went the way of all the world, and I was skin tight and comfortable—that is, after I had filled in the chinks with more blueberries.

(To be continued.)

DOMESTIC CORRESPONDENCE.

Austin, Texas, August 22, 1907.

Editor Dental Review, Chicago, Ill.

Dear Sir: The question raised by Dr. A. C. Hewett in the July number of the Dental Review regarding the disintegration of cement fillings in the mouth, furnishes food for thought in the mind of every progressive dental practitioner. The doctor says "There must be something of a chemical nature to account for its solution, but just how this process is carried on we have never been clearly told."

Prior to the advent of the zinc phosphate cements, when the only cement filling material on the market was Houghton's Os Artificial, a material composed of the oxide of zinc and the zinc chloride, we never heard of the trouble that now exists with the use of the oxyphosphate and the phosphate of zinc filling material now on the market and in general use.

Is it not a reasonable conclusion that the phosphorus contained in the cement filling of today in the form of glacial phosphoric acid may leave its partner (the oxide of zinc) and attack the lime salt contained in the periosteum and cementum of the root of the tooth structure, for which it has more affinity?

If this chemical affinity takes place, it would, of course, cause disintegration of that portion of the filling first affected, the cervical part. In the absence of scientific investigation, we are not prepared to say how much injury the cementum of the roots of teeth, and the periosteum of the bone sustain when such chemical changes occur.

It is a fact well known among chemists that the physiological action of phosphorus when applied to the soft parts in substance produces irritation, inflammation and suppuration. Indeed, it has been used as a moxa, and so recommended. It is liable to cause very troublesome sores and even gangrene, even when used as an ointment. The vapor of phosphorus causes irritation, catarrh, and inflammation of the mucous membrane with which it comes in contact. Especially is this true of the respiratory and counjunctival membranes. It will also attack the bone, producing phosphor-necrosis. This effect takes place, however, only when the phosphorus vapor directly reaches the periosteum, or some raw surface in immediate connection with the nutrition of bone. These facts are mentioned to show that the disintegration of the filling is of minor importance when compared to the injurious effect the phosphorus may have on the soft tissues and the periosteum.

In conclusion, I should very much like to hear from other members of the dental profession who are better posted on chemical affinity and more able to elucidate this important subject than your humble servant. Yours fraternally,

F. S. Casper.

INVENTION, DEVICE, THE CAST GOLD INLAY AND DR. W. H. TAGGART.

To the Editor:

For a variety of reasons I am impelled to write to the profession upon the above caption, in an effort to set the profession to thinking along right lines as I see them, and to do exact justice to Dr. Taggart. I wish to differentiate between invention and device, and to consider the scope of the cast inlay process. Just what is invention, and is the cast inlay process an invention? Webster defines invention as the "act of finding out." "Contrivance of that kind which did not before exist." "An original contrivance," etc.

Device: While an invention may be a device, a device *per se* is not an invention. The inventor creates. Howe invented the sewing machine. He conceived the idea that sewing could be done by machinery instead of the slow and tedious way by hand. His device has been entirely superseded by other machines, but the sewing machine was Howe's invention, and his name will ever be linked with it. The machines which followed were not inventions. The distinctive quality of invention was alone in the first machine. The improvements and contrivances which followed and did the work of sewing by machinery were but the working out of the original idea by Howe, namely, that sewing could be done by machinery. To do sewing by machinery instead of by hand blessed mankind immeasurably. The idea was Howe's, and he invented it. The distinctive idea of sewing by machinery was in Howe's machine. The others were sewing machines, but the idea of sewing by machinery at all was the creation of Howe, and with his device constituted pure invention.

Examined in this light, is not the cast gold inlay an invention? The idea of casting a gold inlay beyond a doubt was in the minds of other ingenious men; among them Dr. Pitts, of this city, who cast gold into matrix, deserves honorable mention. Several years ago Dr. Pitts told me he was working on a method of casting gold inlays in a matrix, and while with some others Dr. Pitts had an idea that gold inlays might be molded or cast, none of these ingenious men were able to produce a method that was of any great practical application until Dr. Taggart brought out his device in January, 1907, before the New York Odontological Society. The profession stood in astonishment at the perfection of Dr. Taggart's work. In one hour of time he had given the profession a system of practice which will double the output of the dentist, which will make old men young, which will keep young men from growing old, and, above all, bless humanity by the ease and perfection with which the average man can do the work. Has anything in recent years so unhorsed old methods of operative practice? To make gold inlays today by the old method is like sewing by hand. What the cast inlay system is to be in dental practice not even those most familiar with the work dare predict. The output of the dentist is to be doubled, but, better still, it is to be of a higher grade. The character of practice will be changed for the reason that with the new system the dentist can do things he could not do before at all. New systems of teaching in our colleges in operative procedures are now a necessity. Is not this, then, an invention as much as was Howe's sewing machine? Is not this invention as Webster defines it, namely, "a contrivance of that kind which did not exist before"? The advent of the cast inlay is in my practice as much of an epoch as was the dental engine. Think of practicing dentistry without an engine. Many of us older men did. Think of practicing without the cast inlay method. The same feeling of helplessness pervades you.

Now, as to Dr. Taggart. I have spoken of his invention which none deny. I wish to say a word about his machine. In a word, the machine certainly typifies the man. It must be used to be appreciated. The machine is almost absolutely self-contained. It is mechanical perfection in its workings, and is artistic in form. This instrument is so beautiful, so perfect, that it would bring the blush of shame to the man who may attempt careless work with it. The inspiration of the genius of its inventor will actuate the operator who may use it. No one can escape the influence of the inventor's professional personality as seen in this instrument. I can see nothing left undone in this wonderful machine, even to an automatic whistle which notifies the operator if he has forgotten to turn off the gas cylinder. Now, let exact justice be done. Let every man who believes in fairness support Dr. Taggart loyally. He will not alone be using the best machine, but he will be doing exact justice to the man who has lightened his burdens, who has doubled his output, who has raised the grade of his work, and who has put money in his pocket. Let us give to Dr. Taggart his due while he yet lives. Let us defend his rights. Dr. Taggart has handed the profession many good things; his work has been helpful to his profession in a multitude of ways. To use a device for casting inlays not made under the Taggart patents is like using stolen property. Dr. Taggart is an Illinois man. Let Illinois not alone give him the glory; let Illinois men rebuke any who may seek to grab from the inventor the financial benefits which under God or man are justly his.

E. J. Perry.

STOP THIEF.

Dr. C. N. Johnson, Editor of Dental Review:

Dear Doctor—I have been thinking that possibly you could aid the profession in capturing a sneak thief who has been preying upon us. I understand that this same man has stolen gold from about twenty dentists in the last four or five months. His plan is to call at noon or 6 o'clock when the dentist may be out and if so help himself, if not, make an appointment to have his teeth looked at and arrange for work. He came to my office Friday noon. I was in so he made an appointment to call at 4:30 to have me examine his mouth. I asked to see it then. He said it was so foul he hated to have me look at it, but consented and I simply looked at it without his getting into the chair and noticed exactly the situation and condition of the teeth. One of the right upper molars is present, the right cuspid, left central, lateral, cuspid and second bicuspid; the other teeth in the upper jaw are roots. I did not examine his lower teeth.

He then left to return but instead of going out of the door he must have entered the bath room. Two minutes later I left the office and went across the hall to my residence for lunch and returned fifteen minutes later to find that all my gold and gold work was gone. Of course he did not return at 4:30. He is a rather stoutly built man, dark mustache, round face, rather large roving eyes, very well dressed. He gave his excuse for letting his teeth get into such shape that he had been buying a home and had been financially pinched, but was now where he could see his way clear to have his work done. Some dentist might recognize him from this description in time to catch him in the act of stealing and then there are plenty who can identify him and give circumstantial evidence against him.

Trusting that some means may be devised to rid us of such a man, I am Very truly yours,

Geo. C. Poundstone.

PRACTICAL HINTS DEPARTMENT.

Edited by G. W. Johnson, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The Dental Review, 55 State street, Chicago, Ill.]

Retention Form for Inlays:—I do not use solid gold inlays in my practice, because a solid gold inlay, in my estimation, destroys the only means I have of getting strength from the cement, and under pressure I get better adaptation between the margins of the cavity and the margin of the inlay.—*E. M. S. Fernandez, Chicago.*

Finishing Fillings:—I always fill my cavities too full, whether with amalgam or gold. I do so particularly with gold, so that the instrument marks may be removed in finishing the filling. I have not used a burnisher for a number of years. In finishing a gold filling I use both serrated and flat marginal condensers.—*E. K. Wedelstaedt, St. Paul, Minn.*

Where Gold Foil Is Not Indicated:—In those cases in which the teeth are loose in their sockets and where the force of packing gold will disturb the peridental membrane, I would use cement or inlays. The next class of cases would be those where we have a great tendency toward decay, where under almost any kind of filling decay will recur. In those cases I would use some plastic material.—*J. N. Crouse, Chicago.*

To Perfume Vaseline:—Much of the vaseline sold today has an unpleasant odor and this is especially noticeable when it is used for lubricating disks and strips in finishing fillings. The odor may be overcome by adding to the vaseline a few drops of one of the essential oils—whichever one the operator may prefer. This does not in any way impair the vaseline and it makes it more agreeable to use.—*C. N. J.*

Method of Removing Gold Which Flows Through Inlay Matrices:—In gold inlay work if the gold flows through the matrix cover all except the gold on the outside of the matrix with wax and then place a drop of aqua regia on the exposed gold and allow it to remain an instant. Wash off with water and you have your platinum free from the gold which has run through.—*H. E. Latcham, Grand Junction, Iowa.*

To Make Cement Adhere to Enamel:—Sometimes when the surface of enamel near the gum becomes exceedingly sensitive, the surest way of relieving it is to flow some cement over it and let it remain till it wears off. To make the cement stick to the smooth surface of the enamel, smear some of the liquid of the cement over the sensitive area and let it remain a few minutes before adapting the cement. The material will then not flake off.—*J.*

Decay at the Borders of Cavities:—In regard to the danger of decay at the borders of cavities, I wish to illustrate this by mentioning a case. A gentleman came to me who had some fine fillings in his mouth, inserted by a good dentist, but they were leaking. I filled these teeth with gutta percha and kept them so filled for two years, then removed the gutta percha and found that a great change had taken place in the borders of the cavities. I refilled the cavities with gold, with no recurrence of decay. The practical solution was that the teeth were harder, so that I felt justified in refilling the cavities with gold.—*J. H. Woolley, Chicago.*

Be Careful With Your Cotton for Treatment:—While so many are very careful that the cotton they use is absolutely sterile, yet many leave the holder with cotton, on the bracket table after the day's work, and the janitor's broom and duster will cause an entire metamorphosis the second day we are using this cotton in treating root canals, etc. We always insist on being supplied by the druggist with a particular kind, manufactured under perfect aseptic conditions, but we abandon the great rule of asepsis by leaving the cotton on the table after the day's work. The proper thing to do is to place the cotton in the cabinet before anything else is done, and keep it there until needed.—*Bernard Bramm, Chicago.*

Where Gold Inlays Are Indicated:—There is a place for gold inlays and I wish to speak of one in particular. Suppose a large cavity in a bicuspid is presented, and it takes in both the proximal and occlusal surfaces and the cavities are joined together; the pulp may be exposed or not; it does not make any difference, but the border line of the crown is involved; there is the place for a gold inlay. I am still filling bicuspids and molar proximal cavities with gold foil, and where they are accessible gold foil is the thing, provided it does not take three or four hours to do the work. If, every time we are going to use gold for filling a cavity, we make an inlay out of it, it is not good practice.—*E. H. Allen, Freeport, Ill.*

Mallets: —With the mallets that supply all of the force, the greatest speed and the least taxation on the operator—namely, the electric or the mechanical mallet mounted on the chair, it is possible for any operator to pack the gold as perfectly as by any other method in the average accessible step cavity in a bicuspid or molar in from twenty to forty minutes. All with no more physical effort on the operator than is expended in the use of a bur. After many years with the foot or standard of the dental engine on the floor and often in the way it occurred to me to attach the engine to the chair. This I found to be a very simple matter and one which led to many delightful surprises, the chief of which was the distinct advantage of having a constant relationship maintained between the patient and the hand piece—*Charles Southwell, Milwaukee, Wis.*

Cement Lining for Cavities:—Many of our cement fillings fail because of lack of adaptation to the walls of the cavity. Cement forced to place by some thicker or heavier material has proved such a good tooth saver that I have used it under amalgam for a number of years, and have found it of immense value. All who have made tests to find the working qualities of amalgams agree that considerable care is necessary in inserting the filling to make it at all durable. This being the case it seems good practice to use the amalgam as a protector for the cement, as thus one can be sure of perfect adaptation to the cavity walls, but in using amalgam in this way we must use one that will not shrink. The use of cement under gutta percha has given me greater satisfaction than any other application of this method of filling.—*E. A. Royce, Chicago.*

MEMORANDA.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

[*COPY OF AN OPINION.*]

CHICAGO, ILL., September 23, 1907.

Illinois State Board of Dental Examiners,
Trude building, Chicago, Ill.

GENTLEMEN: Your secretary, Doctor Reid, has referred to me for my opinion on a communication from the secretary of the Northwestern University Dental School, Doctor Koch, as follows:

"A freshman student from a dental school in another State which matriculated him in 1906 upon a certificate of the attainment of two years' completed high-school work, wishes to enter the junior class of a Chicago dental school upon the grade certificate obtained from the school before mentioned.

"I beg to inquire if, under the ruling of your board and the opinion of your law department, the receiving of such a student in an Illinois school and his graduation, would be a violation of the rules of your board, made under authority of the statute of Illinois, although such a student after graduation, may not apply to your board for examination for license to practice."

The rule of your board as to entrance requirements is not intended to regulate in any manner the education of the student who does not desire to take the examination for a license in this State. A student accepted under the conditions as stated in Doctor Koch's letter would not be entitled to take the examination of your board upon presentation of a diploma from the Northwestern University Dental School. Doctor Koch's inquiry as to the admission of such a student being a violation of the rules of your board should be answered in the negative; however, it must appear forcibly both to your board and to the Northwestern School, that the admission of such a student after the acceptance by the school of your rules as to entrance requirements and the granting to such school, your certificate as to reputability could well be considered a breach of good faith on their part provided they did not indicate in their diploma, or by communication to your board, that the graduated student had been allowed to complete the course without the required entrance qualifications prescribed by your rules, so that your board might be informed and be fortified to reject the application of any such applicant if at any time he should present himself for examination.

Very respectfully submitted,
(Signed) V. A. WRIGHT.

THE AMERICAN ORTHODONTIST.

A new publication with the above title has just appeared. It is "A Journal for the promotion of orthodontia as a science and a specialty." The editor is Martin Dewey, M. D., D. D. S., and it is published by the Alumni Society of the Angle School of Orthodontia. The editorial address is 307 Argyle building, Kansas City, Mo. Its object is to publish the proceedings of this society and other papers and articles of interest to orthodontia. We wish the new journal every success.

THE SOUTHERN ILLINOIS DENTAL ASSOCIATION.

The fifteenth annual meeting of the Southern Illinois Dental Society will be held at East St. Louis, Ill., on the 22d and 23d of October. The president and members of the executive committee are putting forth every effort to prepare an interesting program, and it is hoped that every dentist in our territory will do his part to make the meeting a memorable one.

HARRY K. BARNETT,
Secretary.

STATE BOARD OF REGISTRATION AND EXAMINATION IN DENTISTRY, STATE OF NEW JERSEY.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual examination December 9, 10 and 11. Practical operating and practical prosthetic work beginning 8 a. m., Monday, December 9. Photograph and preliminary credentials must accompany the application. Meeting state house, Trenton, N. J. For full information inquire of the secretary, Charles A. Meeker, 29 Fulton street, Newark, N. J.

DR. HONSINGER'S BIRTHDAY.

On September 12, 1907, Dr. E. Honsinger celebrated his eighty-fifth birthday. He is one of the oldest living practitioners in Chicago, having began practice here in 1853. About four or five years ago he retired from active work, and has since been living quietly at his home on the west side. On the occasion of his recent birthday about a dozen of his old friends in the profession called on him to pay their respects. Dr. Honsinger was always a very efficient operator, and stood for the best there was in dentistry. It is really a pleasure to see one of his sterling worth living to a good ripe age, and reaping the reward of his years of honest effort. The DENTAL REVIEW wishes him many happy returns of the day.

RECENT PATENTS OF INTEREST TO DENTISTS.

861,356. Mouth wedge. Robert Buchfeld, Elberfeld, Germany.
861,270. Pneumatic dental cement injector. Henry L. Cruttenden, Northfield, Minn.
861,874. Dentimeter. Reuben H. Macy, West Palm Beach, Fla.
861,598. Waxless flask. Isidor S. Moscovitz, New York.
862,694. Dental separator. Rufus L. Anderson, Plant City, Fla.
862,588. Dental pliers. Lloyd E. Rowley, Jewell, Kas.
862,780. Dentists' cabinet. Wm. H. Woods, Jasper, Mo.
862,881. Dental appliance. Calvin S. Case, Chicago, Ill.
863,527. Tooth fastener. Frank Fritz, Alexandria, Minn.
863,006. Handpiece for dental engines. Jeffrey H. Springle, Montreal. Canada.
863,478. Dental engine. Wallace W. Williamson, Syracuse, N. Y.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Minnesota State Board of Dental Examiners will be held in Minneapolis at the Dental Department of the State University on Tuesday, November 12, 1907.

All applications must be in the hands of the secretary by October 29, accompanied by the fee of $10.

Examination begins at 10 o'clock sharp on the following subjects: Anatomy, physiology, chemistry, materia medica and therapeutics, metallurgy, pathology, oral surgery, orthodontia, operative and prosthetic dentistry. The practical examination consists of the preparation of a cavity and the making of a gold filling or the preparation of the root and the making of a crown or both for a patient supplied by the board.

All instruments and materials necessary to perform the required operation must be brought to the examination by the applicant.

A diploma from a recognized college must be shown. Any further information will be gladly furnished by

Dr. Geo. S. Todd, Secretary,
Lake City, Minn.

RETIREMENT OF DR. GEO. L. FIELD.

Dr. Field of Detroit, Michigan, sends out the following announcement to his patients and friends. Fifty-six years of faithful service in the practice of dentistry should be sufficient to earn any man a rest for the remainder of his life, and we can only hope for Dr. Field that he may live many years to enjoy the fruits of his long professional career:

Notice of Retirement.

After a continuous practice of dentistry for over fifty-six years, over fifty of which have been in this city, I have decided to close my office and retire from practice permanently. This I hope to do on or about the first of September next. But before doing so I wish to return my hearty thanks to those who have been my friends and patients in years now gone by, trusting they will overlook as much as possible such faults and failures as may have been mine, in the practice of a profession which in itself is not conducive to pleasant memories.

I subscribe myself with kind wishes to all. Very truly yours,
Geo. L. Field, D. D. S.

Detroit, August 1, 1907.

DR. ARTHUR HOLBROOK.

[The following remarks were made by Dr. Holbrook of Milwaukee on the occasion of his visit to the Odontological Society of Chicago, where he was guest of honor, and should have appeared in our September issue.]

When a country practitioner, like myself, comes to a big, bustling, noisy city, like yours, he at once feels a peculiar heart twinge—a sort of lonesome feeling, which may bring to his mind some beautiful poetic lines like these:

I would hie me away from the city's din,
From its turmoil and strife cut loose,
To where the strawberry grows on its straw
And the gooseberry grows on its goose.

Where the tall pines pine,
And the paw paws pause,
And the bumblebee bumbles all day;
Where the grasshopper hops
And the eavesdropper drops,
While gently the cow slips away.

I would hie me away some 85 miles
Where the malt-laden zephyr flits,
To where they wet their lawns with Pabst
And take their baths in Schlitz.

It is hard for some of us who have worn our grooves to quite a depth to get out on the new roads. Shakespeare or Milton or Ella Wheeler Wilcox —somebody or other—has expressed my feelings in a poem called "The Lay of the Inlay."

"You are old, Father William,"
The young dentist said,
"And your hair is inclined to be white.
Yet you still plug up teeth
With amalgam of lead—
Come, now, do you think it is right?"

"In my youth," said the sage,
"People seemed to have time—
For a filling or two *they* would stay.
Now they stop for a *minute*—
Impression is made—
And they're off for some gay matinee."

"You are old, Father William,"
The young dentist said,
"You are bald and your knees are quite lame—
Yet you're wasting your time
Pounding gold in a hole—
Why don't you get onto the game?"

"In my youth," said the sage,
"'Twas considered good form
For patients, appointments to keep.
Says your 'Cascaret' dentist:
'The impression is made.
Now go home and I'll work while you sleep."

SUMS.

BY DR. HOWARD N. LANCASTER.

They say as how she's forty-one,
But I just ask 'em why.
They say they reckon by the sun,
An' I just tell 'em that they lie.

They say as how she's gettin' old—
That she ain't young no more:
Somehow they think that pure gold
Ain't now just what it was before.

One time when I was just a kid,
Down on the old folks' farm,
One noon when all my work was did—
The sun a shinin' bright an' warm—

I lay down in the cool shade where
There was a big pine tree,

An' as I lay a-dreamin' there
The big pine sung a song to me.

It sounded kind o' soft an' low—
One of them lullabys—
An' I a-layin' there below
Felt somethin' pressin' on my eyes,

But wouldn't let it take no hold—
Just kep' 'em open wide:
Folks said the pine was gettin' old,
An' I just told 'em that they lied.

I recollect how Sleepy Joe
Had told our folks about
(We got our home-place off of him)
How he, when he was young, set out

The cotton-woods an' elms that grew
In clumps around the pine,
An' 'twan't no smaller, 's far's he knew,
In his day than it was in mine.

As I lay lookin' up above
Them cotton-woods was still;
An' couldn't catch the music of
The wind that come from off the hill

An' newtled 'round the pine an' played
Like fairy fingers on
A thousand strings that swung an' swayed
With every breeze that come an' gone.

An' yet folks said the pine was old
An' that the other trees
Was young, though you could see the mold
That was a-gatherin' 'round their knees,

An' that their arms was stiff an' bent
An' many leaves was tore;
But that big pine, it seemed content-
Ed, somehow 'r other, an' before

I get done, Stranger, what I would
Just like to say to you
Is that this figurin' may be good,
But it don't always make things true.

I'm mighty sure them figurings
An' all them rules an' laws
That smart folks use to find out things
Don't always tell the truth, because

They say as how SHE'S forty-one,
But I just ask 'em why.
They say they reckon by the sun,
An' I just tell 'em that they lie.

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, NOVEMBER, 1907. No. 11

THE SURGICAL CORRECTION OF CLEFT PALATE AND HARELIP.*

BY B. G. MAERCKLEIN, M. D., D. D. S., MILWAUKEE, WIS.

There is probably no subject in the catalogue of defects of the human body that has not been the subject of recent investigation and study, and it is only reasonable to suppose that the cases of cleft palate have received their just share. But judging from the history of the subject, we are hardly justified in assuming this to be the case, the cause for which is hard to find. This may be partly due to the fact that those best fitted to accomplish any real progress are usually kept busy in other directions, and to the average practitioner the subject seems already exhausted or of insufficient interest to claim his attention, but there are some who are constantly working to bring out new points of interest or new methods to more easily accomplish what we desire and get more perfect results.

It is needless to call attention to the old manner of operating except as a matter of history, but I will try to give a new idea, if such a thing is a possibility under the sun. All surgeons who have ever operated and attempted to close a large cleft met with an almost insurmountable condition; that is, to secure sufficient material to form a flap or flaps of such proportions that the tissue will readily bridge the chasm. And if we do not succeed in approximating the edges the tension is very often so great that the sutures cut through the tissues and a partial failure at least is the result. To Garretson of Philadelphia belongs the credit of having been the first to study the causes of these failures and call attention to the different anatomical structures entering into and forming the tissues under consideration, and carefully noting the actions of all the palate muscles. This enabled him to overcome the difficulty to a large degree and by publishing the method placed the operation for the first time on a scientific basis. Yet this explanation did not fully meet all the requirements, and the operation has since then undergone a change and I may say very marked improvement. It is very evident that Dr. Garretson was perfectly familiar with all the details of cleft palate and everything pertaining to it, except one thing, and that was discovered by Dr. T. W. Brophy of Chicago, namely: that in a complete cleft the maxillæ are separated almost the exact distance of the cleft itself, and there is usually only a very small or no deficiency of tissue whatever. This discovery led to some very heroic methods to reduce the displaced and separated bones to their proper places in small children, and also to a very modified form of operation in adults. To approximate the separated maxillæ is the principal object of all surgical interference and especially is this so if we attempt to get bony union of the palate processes of the maxillary bones, and in order to bring these processes together it is necessary to use considerable force. This difficulty increases with each day until a time is reached when it is not possible to approximate the bony surfaces. Just at what age this occurs, I am not able to tell. It varies with different children and you may succeed in one case at a certain age and fail in another, even younger than the successful case. I have operated a number of cases six months old, very successfully, and have failed to bring the bones together in a case not over four months old. In fact, I fractured the alveolar border in the attempt, and the entire piece eventually sloughed away and left the poor patient in a far worse condition than if no operation had been attempted, and I am not the only one who has met with that kind of accident. It is therefore quite evident that the method is not suited to all the cases or that we are not sufficiently skilled in its performance. It may be possible for an unusually skilled surgeon to make a success of a case where the average would possibly meet with failure; but regardless of the greatest proficiency the operation as usually performed is more or less injurious to the alveolar borders and sometimes seriously injures the tooth germs contained in them, but aside from this, traumatism is always very great and must be taken into consideration in connection with the patient's general health and strength as regards a favorable prognosis. If we can avoid this injury to the patient in this operation we multiply the chances for success a great many times. When Dr. T. W. Brophy of Chicago performed the first operation, namely, the immediate closing of cleft palate on a little girl babe, surgeons with calloused consciences left the rooms because they did not wish to have it said that they were present at such a cruel and inhuman operation; but regardless of this, the operation proved a perfect success, and the world is deeply indebted to Dr. Brophy for giving us new methods for the relief of this deformity. The method as described by the doctor consists of perforating the alveolar borders sufficiently high to pass above the palate process of the superior maxillary bones and into the nasal cavity proper—one perforation in front of the malar process and the second behind it. Both sides are treated alike; then heavy silver wires are passed completely through the perforations from the buccal surface on one side to the buccal surface on the other, then lead plates about ⅜ to ½ an inch wide, and 1 inch to 1½ inches long, with two holes punched in them are used to correspond with the perforations in the alveolar borders. The silver wires are then passed through the holes in the lead plates and the plates pressed down on the buccal surface of the alveolar borders on each side, then the wires on each side are twisted together until the strain approximates the edges. The resistance, however, is so great sometimes that the wires will break without bringing about the desired result. Whenever the resistance is very marked it is recommended to sever the malar processes on both sides from the malar bones by subcutaneous section, then pressure applied with the fingers and sometimes followed with properly constructed forceps will usually succeed in bringing the edges together, which, of course, have been previously pared or freshened.

---

*Read before Wisconsin State Dental Society.

The wires are twisted sufficiently taut to keep the parts in apposition and the operation is completed. The usual care as regards antiseptics and keeping the parts as clean as possible under the circumstances is never to be lost sight of.

This is a fair description of an average case, but in bad cases the traumatism is very much greater, as I have indicated, and aside from the injury that we are obliged to inflict, the method is open to another serious objection, namely: that we are obliged to proceed on the assumption that we will be able to approximate the edges, and pare the same in the beginning of the operation, as this cannot be so well done after the parts have been brought into contact. Should we fail to get perfect apposition or contact after all has been made ready we know only too well that the entire operation is likely to be a failure, and this probably induces us to resort to extreme measures in order to make a possible success of the case.

The wide clefts of babies are the most difficult operations to perform successfully, when such cases have been allowed to go until the bones have become very much hardened or ossified, for then the bones will not bend or yield as easily as if the operation had been performed in the second or third week after birth. Dr. Garretson discovered a great many years ago that it was almost always possible to bend the bones sufficiently at birth or a few weeks thereafter so as to close the cleft. He demonstrated this on the body of a child after death by pressing the bones together and completely closing the cleft, and, of course, the question at once arose, how can this pressure be applied and retained so as to keep the parts in position until such times when union has taken place and the healing process sufficiently advanced and matured to be strong enough to retain the bones in their new position without any additional support. All appliances and experiments resorted to, such as the Hainsby compress, which is simply a circular spring passing around the back of the head and made to press on a pad placed on the cheek and fastened to the ends of the spring, or pads that were held in position by roller bandages or other means—were all found to be inadequate to perform the work required of them, or they could not be kept in the same position long enough to accomplish the desired object. Now, I do not believe that these men have reached the ultimate height of perfection and that nothing remains for us to do but to accept their judgment as final. On the contrary, I think we are just beginning to understand and recognize a few of the underlying principles by which we can more intelligently judge what is best suited in each case, so that we may be able to attain the best and most perfect results that can be achieved in any particular case. Nor will I admit that we have reached the end of mechanical appliances that may be devised to serve as useful adjuncts in connection with the operation, for I am engaged at the present time in devising and perfecting such an appliance, and judging from the progress made so far I am hopeful that I will be successful to the end. Should this prove true, then we will have eliminated the most serious part of the injury that we are now obliged to inflict, namely; the perforation of the alveolar walls and the silver wires in the perforations to hold the parts together. The appliance is designed to take the place of the wires and of such construction that it may be retained in perfect position for several weeks if necessary and is under the complete control of the operator at all times. In fact, should it be found that it seemed impossible or inadvisable for any cause whatever to complete the operating at that time, the appliance may be left in situ and the work finished any time in the future; or should the case demand the entire removal of the apparatus it can be quickly and easily done, as it is not held in place by any wires or sutures attached to the patient nor will it impair the parts or jeopardize the success of a future operation. This alone is a very long step in advance of our present methods, which are not always based on a correct scientific principle or a correct anatomical physiological knowledge of the parts involved, and this must very often lead us to attempt impossibilities, and, of course, meet with failure. To my knowledge, no writer of text books or others have ever called attention to a proper course of preliminary training of the parts (the soft palate) or the bringing together of the hard tissues by slow degrees and to such an extent that the successful result of the operation is almost a foregone conclusion. This can easily be done in cases of children over two and a half years old, or after the temporary teeth are fully developed by banding both molars and cuspid on each side, then uniting the bands of each side by soldering a piece of gold plate accurately swaged and fitted to cover the entire buccal alveolar border. Then solder a gold wire around the upper edge of the plate, allowing the wire to continue on the distal parts of the second molar band in such a manner that it will form an eyelet at the posterior palatine angle of the second molar tooth, the end passing forward and attached to the band of the first molar. This strengthens and stiffens the whole mass, and when securely cemented in place it will stand all the strain that may be applied to it by the screw, which must be made with a swivel and attached into the eyelet with a hook on each end previously accurately fitted. All that now remains to be done is to turn the screw in such a direction that the sides will approximate. It may be necessary to prepare several screws of different lengths as the space to work the same becomes exhausted after the sides approach each other. The time to bring the parts together varies from three months to a year, according to the size of the cleft and pliability and yielding of the bones under this strain. It is not necessary to completely close the cleft or opening, especially if we use muco-periosteal flaps, which are used very successfully in a large number of cases. This is true in an adult, where the sides are high and well covered with a heavy layer of soft tissue, as this is the only part that directly enters into the construction of the flap which closes the cleft. It is very essential that it is not deficient in size, or lacking in vitality, as either of these are almost fatal defects to a successful termination.

It is not possible for the surgeon to supply or accurately ascertain the condition of either of these, and it is not an uncommon thing to have a part of the flap die or slough off some days after the operation, and for which the surgeon should not be held responsible. It is usually caused, however, by too much tension in approximating the edges, thereby lowering the vitality and obstructing the circulation. Too much care and attention cannot be given to these points; the operation and closing of the cleft in this manner as described by Dr. Brophy of Chicago, consists of the following, namely; separating of the periosteum with the mucous membrane and other tissues en mass from the palate portion of the superior maxillary bone and the palate side of the alveolar borders commencing at the highest border of the cleft and continue until the flap becomes large enough to reach the median line without much stretching. This is repeated on the opposite side and may be carried down to an eighth of an inch of the necks of the teeth if necessary, to obtain sufficient material to span the chasm, bearing constantly in mind that you endanger the life and vitality of the flap in proportion that you are obliged to separate it from its bony attachment. Great care should be exercised to avoid wounding or cutting the posterior palatine artery, as it is the principal artery to supply these parts with blood, to say nothing of the severe hemorrhage which follows and is usually hard to control. The next important step is to separate the nasal mucous membrane completely along the posterior border of the palate bones to such an extent that the flaps are free to drop down to the extent that they may be easily approximated. The parting of the edges of the remaining portion of the soft palate or splitting the same is now in order, or this may be done at the very beginning of the operation. We are now ready to introduce the sutures, which consist of two kinds—the tension and the coaptation. The first consists of four wires introduced as close to the alveolar border as it is possible to get them in the front part of the mouth and as far to the sides as it is safe to place them in the soft palate without destroying their usefulness to relieve the tension. These wires are placed about ½ inch apart, two in the soft palate and two in the anterior part of the mouth; they are introduced by first passing a silk thread through the entire thickness of the soft palate or other portions of the flap wherever the wires are intended to be placed. This can best be done by using a needle with an eye at the point and armed with a silk thread, introduced from without inward from the sides toward the median line and bring the point of the neddle in view in the cleft. Now catch the thread with the tenaculum or a small pliers, hold on to the thread, and withdraw the needle in the reversed way that it was introduced and you have one-half of a suture in situ. Proceed in like manner on the opposite side and you have two looped threads in the middle of the cleft. Now place the loop end of the first thread through the loop in the second thread and draw it out in the same way as you did the needle, and you have a complete double thread in place. Care should be taken that the thread is not drawn completely out; this can be avoided by twisting the ends together and clasping a hemostatic on. Now take a silver wire No. 24 gauge and bend one end to form a loop, place in this looped end the silk thread and press the wire loop closely together carefully withdrawing the silk thread the reverse way that it was introduced, and you have a silver wire tension suture in position. Proceed in like manner until all are in position, then take a piece of lead plate No. 26 gauge about one-third of an inch wide and long enough to extend one-fourth of an inch beyond the first and last wire. The lead plate is provided with four holes to correspond as nearly as possible to the position of the wires, and the first and second wires put through the first and second holes and their ends twisted together. The third and fourth wires are treated in like manner; then finish the other side of the mouth in the same way. You are now able to make tension on the flaps by twisting the wires more and more until the edges approximate. Now the usual interrupted coaptation sutures are introduced and tied, and the case is finished. In the after treatment, an antiseptic spray should be used every hour for a number of days except when the patient sleeps. If the nasal spray or douche can be used without much annoyance or irritation to the patient, it is always well to employ it, as the greatest extent of the wounded surface is toward the nasal cavity. In case the silver tension sutures cut through the tissues, little heed need be given to it, as the little holes will usually close again of their own accord, after all the wires are removed.

In the course of this paper I have called attention to the necessity of bringing the different parts into a condition so favorable that the success is a foregone conclusion. This can and ought to be done, or at least attempted, in every difficult case where there is any doubt about the ultimate success of the operation. It is not generally known that considerable contraction of the maxillæ or a narrowing of the arch takes place in a large number of cases that have been treated successfully by an operation, without any apparent or at the most only a slight disturbance of the occlusion of the teeth. It seems that the narrowing process is so slow that the teeth in the lower jaw have ample time to accommodate themselves to the new condition. When I first observed this contraction, I could not account for it, and wondered what could possibly be the cause, as the small amount of secondary formed connective tissue could not possibly be responsible for so large a contraction as was present in some cases and could be easily seen in the difference of the size of the models made from impressions taken before, and one some years after the operation. The solution, however, is much easier than I had anticipated and can be summed up in one word "Tonicity." As this is the force which holds the teeth in a position and not pressure, it is easy to understand that the same force will be exerted on the arch after the parts have been placed in a normal or almost normal condition.

While studying these the thought occurred to me. Why do we not take advantage of this and bring the contraction about in an artificial way, and thereby lessen the size of the cleft? The only thing to be done was to devise some method by which it could be accomplished, and led to the method described in the beginning of this paper.

Fear of contracting the arch too much need not be entertained, as the tendency of the parts to return to their former position is always present and will contribute to correct any irregularity of the occlusion that may have been caused by the contraction. If, however, the occlusion continues to remain defective, after the lapse of six months or a year, it can be easily corrected by the usual methods employed to expand the arch.

If there is any deficiency of the parts that constitute the soft palate, or only a marked contraction present, it will almost be useless to attempt to close the cleft by an immediate operation, as the tension necessary to approximate the edges is so great that in a large number of cases the sutures will cut through the tissues before union of the edges has taken place, and of course a failure is the result. A systematic pre-operative course of teasing, stretching or pulling of the part should always be instituted and carried to a successful conclusion. This should always be done by the surgeon wherever it is possible, and in any case should always remain under his direction.

Whenever a patient lives at a distance, some member of the family can be instructed to do it. If a properly constructed pair of pliers or tweezers are used, it is a comparatively easy task, all that is necessary is to put the parts on a stretch, a little only at the beginning, and gradually increasing it until the parts become soft and yielding and can easily be stretched to approach each other. This treatment should be continued for weeks or months, or until the desired effect is attained. With a case prepared in this manner a successful termination is almost a foregone conclusion.

A BRIEF REVIEW OF THE CHEMISTRY OF PULP DECOMPOSITION WITH A RATIONAL TREATMENT FOR THIS CONDITION AND ITS SEQUELAE.*

BY J. P. BUCKLEY, PH. G., D. D. S, CHICAGO.

In this paper I have been asked to review modern methods of treating putrescent pulps and acute and chronic alveolar abscesses. I am happy to have this opportunity, for I appreciate that any *method* is only the way, or the process by which ideals set up are realized; and during the last few years I have cherished certain ideals along these lines which I am optimistic enough to believe, have, in a measure at least, been realized; and have aided in placing the treatment of these conditions upon a more definite and rational basis.

---

*Read before Illinois State Dental Society, May, 1907.

In order to scientifically apply drugs and remedies to the treatment of the conditions under consideration, it is necessary that we have an intimate knowledge of the nature and character of the products of pulp decomposition. To acquire this knowledge we are led into a field which as yet has not been fully explored, for while a few investigators of our profession have given their attention to the subject of pulp decomposition, the conclusions as to the chemistry of the process are by no means uniform. This fact is to be regretted and may seem strange to the casual observer, but let it be remembered here that the difficulties encountered in investigating this subject are many and confusing, especially is this true of the investigator who is neither satisfied nor contented to make his statements at second hand or to advance theories from his unaided inner consciousness that cannot be substantiated by laboratory experiment or confirmed by clinical observation.

The limited time at my disposal precludes any lengthy discussion of the chemistry involved in pulp decomposition. I must take it for granted therefore, that this audience is more or less familiar with my published writings upon this subject. In order, however, that you may fully understand my reasons for suggesting the use of certain agents in the treatment of these conditions, which will be discussed later in this paper in detail, I must preface this discussion by a brief review of the nature and character of the contents of a putrescent root-canal.

All authorities agree that the decomposition of the pulp tissue is a gradual analytic process wrought, under favorable conditions, in the dead tissue by micro-organisms. For convenience in studying this complicated process, the compounds resulting therefrom can be arbitrarily divided into two classes—*intermediate* and *end-products*; and I have previously called attention to the fact that it is largely the products of the putrefaction of the proteid, rather than the products of the fermentation of the carbohydrate constituents of the pulp tissue with which we have to contend in correcting the putrescent condition.

The intermediate products depend, to an extent, upon the character of the micro-organisms in the tissue; but it is safe to say that ptomaines and amido-acids are formed. Some of these ptomaines are volatile liquids of a characteristic, cadaveric odor, and are deadly poisons to animal tissue. All of them, together with the amido-acids, are capable of being further putrefied, producing as end products, *ammonia* or derivatives and *fats* or *fatty acids.*

The other end products produced more directly from pulp decomposition are water, carbon dioxide, hydrogen sulphide, and a semi-putrid substance consisting largely of fats, depending upon the extent to which the putrefaction has progressed. Stimultaneously with the decomposition of the pulp tissue proper, the dentinal fribrillæ are also broken up, as are also the constituents of the blood; and therefore the tubuli as well as the pulp chambers and root canals are filled with the intermediate and end-products.

Every dental practitioner knew, from sad past experience, that in this process some kind of mephitic gases were evolved, which if confined, would produce severe pathologic disturbances, but just what the gases were and how the unfavorable conditions were brought about, we were left to conjecture.

From our study of the chemistry of pulp decomposition we have every reason for believing that the main gases produced are *ammonia* and *hydrogen sulphide.* When these gases are generated and cannot readily escape through the cavity, pressure is produced, thereby forcing the poisonous ptomaines through the apices of the roots into the surrounding tissue from which infection, septic pericementitis and in many instances an alveolar abscess results.

Now then, with this knowledge of the nature and character of the contents of a putrescent root-canal, I feel that we can, with some degree of intelligence, select drugs and remedies to be used in the correction of the putrescent condition which will not only destroy germ life, but will also act chemically upon these noxious products and change them into non-infectious and non-toxic compounds In this connection it should be remembered that the putrescent condition has been brought about through the agency of micro-organisms by a gradual analytic process; and among the products formed which must be considered in the treatment are *hydrogen sulphide,* the *poisonous ptomaines,* and *ammonia* or derivatives, the latter gas being evolved from further putrefaction of the last named compounds or compounds of similar composition. It is well to remember also that *fats* or *fatty acids* are a class of end products resulting from the putrefaction of proteid substances.

The main gases formed then are *ammonia* and *hydrogen sulphide.*

Now it will be necessary to dispose of these gases in order to hermetically seal the cavity, an object, the accomplishment of which is much desired in the treatment of these cases; for by so doing we prevent the oral fluids from contaminating the medicine within the tooth, the medicine from escaping into the patient's mouth and the tooth from changing color during the time of treatment.

It has been known for some time that formaldehyd, a gas which occurs in commerce in a thirty-seven per cent aqueous solution and which solution is recognized by the United States Pharmacopeia of 1900 under the name of Liquor Formaldehyd or Formalin, will unite with ammonia producing urotropin, a solid, as $6CH_2O+4NH_3=(CH_2)6N_4+6H_2O$. Formaldehyd unites also with hydrogen sulphid, forming, in my opinion, methyl alcohol, a liquid, and sulphur, a solid as — $2CH_2O+2H_2S=2\ CH_3OH+S_2$.

It is stated on good authority that this same gas, formaldehyde, unites with basic ptomaines, forming inordorous compounds By the use of formaldehyde, then, the *irritating gases* and *poisonous liquids* (largely ptomaines), can be changed chemically into non-irritating and *non-poisonous liquids* and *solids.* The official solution of formaldehyde, however, is too irritating for general use; therefore, inasmuch as fats result from pulp decomposition and are present as such in a putrescent root-canal, a few years ago I suggested cresol as the agent with which to dilute the official solution and thereby modify the irritating action of formaldehyde. Cresol is now also recognized by the United States Pharmacopoeia of 1900 under this name. Formerly the product was commercially called tricresol. This agent has a tendency to darken when exposed to light It is recommended that a clear solution be obtained and then kept in an amber colored bottle.

Liquor formaldehyde can be diluted with such other agents as phenol or creosote, if, in the latter instance, a small amount of alcohol is added to clear the solution. Cresol, however, is recommended for four principal reasons.

1. It is miscible with the liquor formaldehyde in all proportions, thus making, without the addition of alcohol, a good pharmacal product from which formaldehyde gas is constantly generated.
2. It is a good disinfectant, much more powerful than phenol.
3. It possesses an anodyne property which modifies the irritating action of formaldehyde

4. It acts chemically upon the fatty compounds, thereby disposing to advantage of these substances.

In the successful treatment of the conditions under consideration there are three important factors which must be accomplished.

(1) Establish asepsis.
(2) Prevent recurring sepsis
(3) Preserve or restore the color of the tooth.

Treatment of Putrescent Pulps.—In calling your attention to the method of treating this condition which has proved very successful in my practice and which is now being used quite extensively throughout the United States as well as in foreign countries, I desire to emphasize the necessity for observing the details of the method. Our first duty here, as in all treatment cases, is to make a correct diagnosis, after which the rubber dam should be adjusted in every case where it is possible to do so, and all the teeth included sterilized. Then with a suitable round bur, the pulp chamber is freely opened, exposing all of the canals but making no attempt to remove the contents therein at the first sitting. Now, on a small pledget of cotton, the following remedy is placed in the pulp chamber and over the mouth of each canal.

ORIGINAL FORMULA.

℞
Cresol,
Liquoris formaldehydi, ...aaf ʒ j-m.
Sig. Use as directed.

For convenience this remedy will be called *formo-cresol.* It is always best to seal the cavity with a quick-setting cement, for the remedy should be *hermetically sealed* and pressure must be avoided. To prevent the cement from filling the entire cavity and also to facilitate its subsequent removal, metallic or paper discs or even cotton can be placed over the remedy filling most of the cavity, when only a veneer of cement is necessary to hermetically seal the same. This dressing can remain until you desire to have the patient return for a subsequent sitting. I prefer to leave it about two or three days. However, it can be safely changed the following day and no harm follow if it remains a week or more. At the second sitting the rubber dam should be adjusted, the teeth included sterilized and the dressing removed; after which the canals should be mechanically cleaned with a proper broach. If there be any odor in the canals, characteristic of putrescence, or if effervescence is produced by testing with a solution of hydrogen dioxide, the canals should be dehydrated with alcohol and warm air as thoroughly as possible and the original formula placed on cotton, this time loosely in each canal, and the cavity hermetically sealed.

In those cases where at the second sitting there is no evidence of putrescence, which will be found to be the condition generally if the first treatment is properly employed, the original formula can be modified and used. It is not necessary nor advisable, however, to keep a modified formula prepared. It can readily be made at the time by taking two minims of the original formula on a clean watch crystal, and adding to this one or two minims of cresol, as thought best by the operator at the time. I suggest modifying the original formula to suit the condition at hand, because it is possible, by the careless or injudicious use of the formo-cresol remedy to irritate the tissue in the apical area, resulting in a sore tooth. I want to emphasize, however, that such a result is due to pure carelessness on the part of the operator. This dressing should remain for at least three days by which time the remedy will have sterilized the entire tubular structure of the dentine, thus *establishing asepsis.* All that is necessary now to *prevent recurring sepsis* is to thoroughly fill the canals. This remedy will not discolor the tooth structure and the fact that it not only can but should be *hermetically sealed in the cavity,* will prevent discoloration by the ingress of the fluids of the mouth. In case the color of the tooth crown was lost before undertaking the treatment, and being desirous of preserving same by an inlay or filling, the color can be restored by one or two applications of sodium dioxide.

Complications:

1. *Badly Decayed Root*:—This formo-cresol is very destructive to the soft tissues of the mouth, therefore the importance of always adjusting the rubber dam. If this cannot be done on account of a badly decayed root, it is suggested that care be taken in sealing the remedy in the cavity at the first sitting, and in placing the cement the original outline of the root can be approximated. After the cement has set, a band or matrix of gold or German silver can be fitted to and cemented on the root. In treating the case where there is a tooth posterior, it is best to place the clamp on this tooth

and gently stretch the rubber over the band and thereby avoid loosening the same.

2. *Pulp Partially Alive*:—In those cases where the pulp tissue is putrescent in one or more canals of a multi-rooted tooth and alive in the other one or two canals as the case may be, we will find much satisfaction in using the formo-cresol remedy. These are exceptional cases and it is difficult to know whether this condition exists until the second sitting. If there be much vitality in the live pulp tissue the formaldehyde from the remedy will probably make the tooth ache; but after we know the condition, our method of procedure is simple and the results will be certain.

   A small pledget of cotton, dipped in the remedy, can be gently placed over the mouth of the canals which contain putrescent material, and a thin, quick-setting cement flowed over the cotton. After the cement has set, the live pulp tissue in the remaining canals can be devitalized or anesthetized as the operator deems best at the time. Formerly these were difficult cases to treat, but with a remedy which can be hermetically sealed in a putrescent root-canal, the procedure is materially simplified.

I realize that the method of treating putrescent pulps here given, is a radical departure from those generally advanced and, like myself at first, some experienced practitioners may hesitate to hermetically seal a cavity in a tooth which contains a putrescent pulp. The reason this could not be done in the past by the methods in vogue is that drugs in most instances, were selected and used solely because of their ability to inhibit the growth or destroy the vitality of microorganisms. The fact that there were other things such as irritating gases and poisonous ptomaines found in the canal and tubular strucure of the dentine and also the further fact that it was as necessary to dispose of these substances as it was to destroy germ life, was not given the significance this phase of the subject merited. The treatment which is here outlined is along rational lines, for the remedy chemically converts the noxious intermediate and end-products of pulp decomposition into substances which themselves possess antiseptic and disinfectant properties.

Acute Alveolar Abscess:—The treatment of septic pericementitis and acute alveolar abscess is so nearly identical that they will be discussed here conjointly. In those cases where the patient did not present for treatment until the confined gases had escaped through the end of the root, carrying the poisonous ptomaines into the surrounding tissue, it is our duty to try and aid nature in aborting an abscess. It is in these cases that good judgment must be exercised and extreme care taken. There is no condition which we are called upon to treat wherein a practical knowledge of pathology and therapeutics will serve us better than in this particular case. Frequently patients delay coming to the dentist until the infection has progressed to a point where all remedies will fail in aborting an abscess; but in many instances this result may be prevented by the proper use of drugs. The local treatment here is practically the same as above for an ordinary putrescent pulp; for you never have a case of pericementitis or incipient alveolar abscess unless the pulp is dead and has undergone, partially at least, the process of decomposition. However, if the tooth is extremely sore, as is usually the case, the patient need not be subjected, at this sitting, to the annoyance of adjusting the rubber dam. Keep the tooth as dry as possible, open into the pulp-chamber, holding the tooth by some means while drilling, so that the jarring will not further irritate the condition; then carefully seal in the formo-cresol remedy with cement, after which our attention, if necessary, should be given to the treatment of the infected alveolo-cemental membrane. In order to control the infection, and at the same time aid nature in readjusting the abnormal condition, it is not only our privilege, but it is our duty in these severe cases to administer internal remedies. For this purpose alterative drugs and saline cathartics are indicated, depending, in a measure, upon the extent to which the infection has progressed.

One of the most prominent symptoms with which we have to contend is *pain*. In most cases the pain will subside soon after the local treatment, especially if the remedy, equal parts of alcohol and water, suggested by Dr. J. E. Keefe, of Chicago, is used. This remedy is best administered in the form of a spray, using a watch case atomizer for liquids, forcing the spray well back into the nostril on which ever side the affected tooth is located. It is well occasionally, however, where the patient is nervous and has lost considerable sleep, to administer drugs which act upon the central nervous system, thereby controlling the pain. There are several drugs, which, if properly given, will produce the desired effect. I generally prescribe acetanilid in the form of the official compound powder or dissolved in whisky. If our efforts in aborting the abscess have been successful the case from now on is treated as an ordinary putrescent pulp, otherwise it is treated as a chronic alveolar abscess.

Chronic Alveolar Abscess:—There are two varieties of chronic alveolar abscess—those without an external opening, except perhaps through a cavity in the offending tooth, and those which are discharging through a sinus. In these cases the decomposition of the pulp tissue is complete; the intermediate products (ptomaines and amido-acids) have largely been broken up and pus has been formed from the tissue and fluids surrounding the ends of the roots.

1. *Abscess Without Sinus*:—In treating that variety of alveolar abscess which is without an external opening except through a cavity in the tooth, our method of procedure is somewhat different. The tooth should be located, the rubber dam adjusted and the teeth included sterilized as before; then the pulp chamber is opened with a suitable round bur. Usually the pus flows freely, in which event it is permitted to do so, pressure being made on the tissue immediately over the end of the root. It should be our effort to mechanically evacuate as much pus at each sitting as is possible. This being done, we have no necessity for using formaldehyde in the same strength solution as in those cases where the pulp chamber, root-canals and tubili are filled with the intermediate and end products. The modified formo-cresol remedy will be useful here. The canals should be dried with alcohol as thoroughly as possible and the remedy, on cotton, sealed in each canal. It is however, at this sitting, impossible to get the canals dry, and it is unnecessary to have them so, for the remedy will penetrate where moisture is present. This is an advantage over most remedies suggested for this purpose. In those cases where there is a copious flow of pus at the first sitting, the original formula can be used, and the dressing should be changed every day until it can be removed without the pus flowing from the canals. When pus is forming rapidly at the end of the roots, the remedy soon becomes dissipated and neutralized and it is a loss of time to leave it in the canals more than twenty-four hours. Unless there be some complication, the pus formation should be checked in one or two treatments, at which time the modified formo-cresol remedy can again be used. It is now possible to change the dressing too often. The formation of pus has been checked and the tooth

should not be disturbed for at least one week or ten days in order to give nature a chance to effect a cure. If at the end of this time there is no evidence of pus and the case gives a favorable history, the canals can be filled. Should there, however, be a slight odor, although the tooth has not caused any trouble, we are not justified in filling the root. In these cases, we can further modify our original formula by taking one drop of the mixture and adding two or three drops of cresol. It should be remembered that the value of formaldehyde in any remedy to be used in the treatment of these conditions depends upon the power this agent has of uniting chemically with the hydrogen sulphide, ammonia and poisonous ptomaines. When these substances are not present, formaldehyde, especially in this strength solution, is contra-indicated. This precaution is mentioned here because formaldehyde is an irritating gas and any remedy containing it should be modified according to the conditions as found.

Quite frequently in these alveolar abscess cases, after the formation of pus has been checked, we have a weeping of serum from the canals. An excellent remedy to use in this case is eucalyptol to which thymol has been added in the following proportion:

℞ Thymol.................gr. x
Eucalyptol.............f ʒ j—M

Sig.—Dry the canal as much as possible and hermetically seal in the remedy.

If this remedy fails to check the secretion and the fluid is *serum*, not pus, no hesitancy need be felt as to filling the root, although the canals can not be dried.

2. *Abscess with sinus.*—In those cases where the pus is discharging into the mouth through a sinus, our first duty is to locate the offending tooth. This is generally a simple matter, for the reason that the sinus usually opens immediately over the tooth from which it comes. The pus, in making its exit, however, follows the line of least resistance and in some cases the condition of the process is such that the pus burrows forward or backward and opens through the gum several teeth removed from the one which is causing the trouble. These are the cases that are difficult to diagnose, especially where the abscess has been discharging for some time, when there is not much tenderness in any special tooth and where there are several devitalized teeth on this particular side of the mouth. Sometimes two teeth containing putrescent pulps have a common

sinus. In this case, it would be impossible to heal the tract by treating only one of the teeth. The use of a silver probe will be valuable in all such cases. By gently working the probe forward or backward, the sinus can be explored and the offending tooth or teeth located without drilling into innocent teeth—a discouraging procedure to both patient and dentist. The tooth being located, all that is necessary to effect a cure, there being no complication, is to force some bland solution through the root canal and sinus, thus being certain it is well established; cauterize the tract, hermetically seal in the canal or canals the same agent used for this latter purpose, or the modified formo-cresol remedy and at a subsequent sitting, the case giving a favorable history, fill the root. There are two objects in forcing a bland solution through the sinus—one is to be certain that it is open and the other is to mechanically wash out the pus. Whenever pus can be mechanically removed it is always best to dispose of it by this means, rather than to do so by the use of some chemical agent. It is common practice, after the sinus is established, to use a solution of hydrogen dioxide. This is often a dangerous procedure and *always unnecessary* if the first solution has been used in sufficient quantity. For cauterizing the sinus in simple cases, ninety-five per cent phenol has been largely employed. An excellent preparation to use for this purpose is a modified phenol solution.

℞ Menthol..................ʒj
Thymol.................ʒij
Phenolis..............f℥iij
Mix and heat.
Sig.—Use where indicated.

With the sinus well established, it is never necessary to place either of these solutions in a hypodermic syringe. I know of several instances where this has been tried with disastrous results. The remedy can be applied to the canals on cotton, when, with unvulcanized rubber and a suitable instrument, it can be forced through the sinus. Alcohol is a positive antidote for phenol: the alcohol bottle should therefore be in a convenient place so that the remedy used in the canals can be neutralized at once when it appears at the mouth of the sinus. If this has been well done, it matters little what drug or remedy is sealed in the canals. The modified phenol or the modified formo-cresol solution will give excellent results if hermetically sealed in the canals for about one week. In cases of long standing where we can reasonably suspect a roughening of the end of the root or process through which the pus has been discharging, it is good practice to use, as the cauterizing agent, a fifty per cent solution of phenol-sulphonic acid, and in stubborn cases the pure acid can be employed. This agent rapidly disentegrates cotton, therefore it can be placed in the canals on threads of asbestos, wool fiber or silk and forced through the sinus in the usual manner, cauterizing the same and also chemically dissolving any sharp edges of the root or process which may be a source of irritation and prevent healing. I do not believe in delaying the root filling long after the sinus has been cauterized in uncomplicated cases; for by filling the root as soon as we are certain that the sinus is healing, we avoid a weeping condition, which usually exists and which is annoying when this part of the treatment is delayed for one month or six weeks as advocated by some writers. In these cases where the first treatment has been thorough and the case gives a favorable history, the root should be filled at the second, or at the most, at the third sitting. If the case does not yield to the above treatment, some complication can be expected. It is sometimes difficult to establish the sinus—especially on molar teeth. In all such cases, where there is no complication, the case can be nicely treated with the formo-cresol solution as outlined under treatment of abscess without sinus.

Before closing, at the possible risk of being tiresome, I want to refer briefly to the treatment of putrescent pulps and abscesses associated with deciduous teeth.

TREATMENT OF PUTRESCENT PULPS AND ABSCESSES IN DECIDUOUS TEETH.

In treating the conditions under consideration, it is necessary in most cases to modify our usual method of treatment. If the abscess is associated with a deciduous molar which we would desire to save for at least a year or two, it can be treated nicely in the following manner:

After gaining the confidence of the little patient, the mouth can be rinsed with an antiseptic solution—one which has a pleasant taste. Then open into the pulp chamber and place a pledget of cotton in the opening. Now mix on one end of the cement slab, precipitated calcium phosphate and the formo-cresol remedy, making a stiff paste. On the other end of the slab, have a quick-setting cement ready to mix. Again rinse the patient's mouth and keeping the cavity as dry as possible, gently pack the paste into the pulp chamber and flow the cement over the same, filling the cavity. If deemed advisable the cavity can subsequently be prepared in the cement and filled with amalgam. It is remarkable how rapidly these abscesses will heal and remain quiet when treated in this manner, providing of course there be no caries or necrosis of bone.

Complications.—There are many complications of chronic alveolar abscesses of both varieties (with and without a sinus)—the treatment of which, on account of the length of this paper, will not be discussed in detail; such as a denuded, absorbed or encysted root, those involving the vault of the mouth or the antrum of Highmore. In all such complications the general method of treatment should be modified to meet the conditions as they exist. For instance, in the case of an abscess without a sinus where we can reasonably suspect and where the indications point to a roughening of the end of the root, we ought not to expect to cure the case by simply sealing remedies within the canals of the tooth. If we do, we are expecting too much of drugs. Again in a case of an abscess with a sinus, where the pus has been discharging for several months, with the not unusual result that the end of the root or process, through which the pus has discharged, has become roughened, we should not expect to effect a cure by forcing phenol or modified phenol through the sinus because such agents as these have no action whatever on the bony structures.

In most of the complications, the "acid treatment" is especially indicated and they will yield nicely if such agents as a fifty per cent solution of phenol-sulphonic, or a 15 per cent solution of trichloracetic acid, preferably the former, is used in the proper manner. Should the case not yield to the "acid treatment," we can often save the root by surgical interference, especially by excising its end. In my opinion, however, the end of the root should be excised only as a last resort and then under the most aseptic measures.

Whenever the operator is in doubt as to the best means of treating complicated alveolar abscesses, he should never hesitate to consult with a practitioner who has had more experience in treating these cases. Such a course cannot be construed as a lack of knowledge, but as evidence of conservatism and progress.

DENTAL RESEARCH WORK.*

BY C. R. LAWRENCE, D. D. S., BETHANY, ILL.

Probably one of the greatest needs of the dental profession, at the present time, is scientific research work that will solve some of the many perplexing problems that confront us in our daily practice.

This paper is intended to deal with research work, as applied to dentistry, from the standpoints of its needs and how to meet them; its value and our lack of appreciation of the work; what is being done in an organized way. Some suggestions of plans for promotion of such work; and why the Illinois State Dental Society should take up this work as a body.

As to the needs, certainly no intelligent dentist will deny that they are very great, and more of this work simply means greater progress for our profession.

There was a time in dentistry, when the scientific research man was not held in very high esteem by his professional colleagues, but now the every-day practitioner is learning that he profits by the labor of the scientist, as is shown in many significant ways, for we have arrived at the point where we must know the science of things rather than that which is merely on the surface.

The field for scientific research work in dentistry is certainly a large one, as there are many problems awaiting our solution, a few of which may be named here as follows:

First, lack of definite knowledge concerning disease of the peridental membrane. Second, the phenomena that controls dental caries. Third, the pain problem. Fourth, the cement question. Fifth, the color problem in inlay work. There is surely a solution for each of these and we need the research man to solve them.

The December, 1906, bulletin of the Illinois State Dental Society, that splendid little publication we all read with a great deal of pleasure, says as follows: "While the plan on which our society is organized requires that it continue to have a large membership, it should not be forgotten that we must make material advancement in professional matters if the reorganized society is the success that was anticipated. Let us then keep these two things in mind for 1907: first, that we must seek to raise the standard of the profession by each doing his share with his fellows in the advancement of scientific work; second, that we must be constantly on the lookout for new and good men to keep our membership large enough to carry on the work we are doing."

---

*Read before the Illinois State Dental Society, May, 1907.

Undoubtedly the writer had in mind this fact that this field of dentistry needs more workers, and especially more encouragement, and why should we, as in the past, expect a few men to work out our problems for us? We need to take up the work with the scientific research man and work hand in hand with him and show that ours is a progressive profession and in this way reflect the professional spirit of the times.

When men spend hours, days, weeks and even years, for the advancement of our profession it is high time, that we who profit by their labors should in some way show our appreciation.

We have the right kind of spirit here in Illinois as was shown last year at out banquet in Springfield. Let us encourage the scientific research man and watch him redouble his energies, and see if we will not be repaid many fold, or if there is no other effect it will brighten his professional pathway.

The value of research work in any science cannot be fully estimated by the use that immediately follows its announcement, but has any invention of importance been made that has not had its basis in some previous discovery?

Does the telegraph, the telephone, the electric light or trolley line owe nothing to Franklin and his kite?

If you will look at the past in dentistry you will see that our progress has been due to the application of the scientific methods to the practical problems. And it is to this application that dentistry owes its standard at the present time.

Of course scientific facts may sometimes prove to be unfit for practical application to dentistry because of an imperfect instrumental appliance.

We do not justly value research work, because very often we do not receive the benefit that was intended to be given.

Black solved the problem of how to make alloys yet how many of us are receiving the benefit of his labors in this line?

The manufacturer has stepped in between us and probably we are getting the right kind of alloys and probably not. We should not trust too much to the manufacturer, for certainly the dentist should know the ingredients of an alloy he is using so that they cannot impose upon him something unfit for use.

The wise physician does not perscribe a drug of which he does not know the composition and await the results, but too often we dentists do such things and find out the results too late, much to our sorrow.

We need a laboratory of our own where our investigators can test the various materials offered the profession and give the result of these tests in a fearless manner, by their right names, and not as has often been done in the past, by calling the one that shows the best test by A. and the bad one by B., etc., and leave the dentist to guess which is which. Such tests do not enlighten us as to which is best for our use.

The New York State Dental Society is the only dental organization in the United States that the writer has any knowledge of, with the possible exception of that of Iowa, that is carrying on dental research work as a body.

About two or three years ago this society raised one thousand dollars by voluntary subscription at one of its meetings, to be devoted to the furtherance of scientific research work, and so far this fund has been used to a good advantage.

Dr. F. A. Ballachey, a member of the present committee on research work, informs me that they have used about all of this fund and expect to have no difficulty whatever in raising a much larger fund if necessary.

The plan along which they work is as follows:

The State Society at its annual meeting decides on the phase of investigation for the following year and selects a committee of three men to direct this work.

This year they are trying to prove that periods of comparative immunity from, and susceptibility to caries are due to the normal presence and abnormal absence of potassium sulfocyanide; that individuals whose saliva has a constant normal proving have little decay and vice versa.

Along with their laboratory experiments they have prepared a test sheet which is sent to practitioners, urging that they make tests of extreme cases in their practice. These tests are recorded and tabulated and presented to the society.

I understand they have some very good reports to make this year and; if their ideas prove correct, it means that the drug will be administered to our patients when we find a deficient proving of same.

In the past the amalgam question was studied.

The New York Society also has a William Jarvie gold medal fund for the encouragement of individual scientific research work which was a gift of Dr. William Jarvie.

The following is an extract from the address of Dr. Jarvie in offering this fund to his society:

"In every country there are some men so devoted to their art or science that their entire time, talents and energies are given up to the work of original research in the direction in which they may be especially interested. These men are content if financial returns be barely sufficient to procure for themselves a most modest subsistence, being amply repaid and feeling rich indeed, if they succeed in adding to the knowledge of science or accomplishing something which may lead to the amelioration of the condition of their fellow men.

"To such, the recognition and appreciation of the value of their efforts and the pronounced sympathy of their associates in their own profession would tend greatly to encourage them to continue in the field of scientific research, when otherwise discouragement and discontinuance of effort would prevent accomplishments which might be the means of producing the greatest benefits to mankind.

"In our own profession there are those who have devoted years to the investigation of various subjects, with results which have added much to our knowledge, and which assist us in ministering to and overcoming the lesions which it is our province to treat.

"To recognize the work of such, and to encourage the investigation of others, I would recommend that a committee of five be appointed who shall report to the society names of those, who, in their judgment, have contributed results of their original research of such a character as have materially advanced the art and science of dentistry, those thus recommended to be awarded a gold medal of appropriate design and inscription and to be elected Fellows of the Dental Society of the State of New York.

"If this recommendation be approved by you, I shall esteem it an honor to be allowed to donate to the society one thousand dollars to be known as 'The William Jarvie Fellowship Gold Medal Fund,' the interest of which shall be used to purchase the medals."

One who has been in close touch with this matter says "that this fund must be much larger than that now, as it is large enough for the interest of it to pay for the medal each year, and I understand it costs something like two hundred dollars."

These are certainly significant and encouraging signs of the times, and are to be heartily endorsed by the profession, but we need to go a step further, and make these gifts of a more substantial nature.

Many scientific research men in dentistry are not only sacrificing their time, but a great deal of money for our benefit. In this connection I take liberty to quote from a paper of Dr. L. P. Bethel of Columbus, Ohio, read before the Pennsylvania State Dental Society:

"Some time since, through curiosity, I inquired of several of our most prominent researchers if they had any idea of how much money, approximately, their original investigations for the good of dentistry had cost them?

"Pardon me if I quote briefly from some of the replies.

"One writes: 'I have spent, I think, quite a considerable amount of money in trying to find out things, but whether it was for the good of the profession or myself I never have been quite sure.

" 'It seems to me that it has been largely spent to gratify a natural curiosity, and suspecting that to be the case, I have never kept any account of it.

" 'If I had no curiosity, I might have been able to retire by this time, or much earlier. Such research work as I have done was undertaken and carried out because I wanted to know the reason why, and after I found it out or thought I had found it out, I have usually told it to the dental profession.

" 'I have been satisfied with the belief that in securing a knowledge of the reason why, I have received full compensation for any outlay required to achieve that end.

" 'What the dental profession thinks about it, and especially whether they regard such work as done for them or as being of benefit to them, I do not know. They never told me.'

"Another says: 'It would be about as difficult for me to tell how much money I had expended in research work in dentistry as to tell how many blackbirds I have seen in a flock. I only know there were lots of blackbirds, and this research work has cost me lots of money. I can think of instances when two or three or even four hundred dollars have gone in a lump, but the larger part has gone in smaller sums, and it is impossible for me to give any very accurate idea.'

"Another writes: 'I have at the present time a certain amount of help in my original research through the Dental Institute, in which I have a laboratory free of rent and my current expenses for the most part paid. Nevertheless I still pay out of my own pocket something like eight hundred dollars a year, to which should be added the expenses of attending various dental meetings, which in the last year ran close to five hundred more.

" 'Indirectly my expenses have, of course, been very heavy and if the time I have used up in original research had been employed in the practice of dentistry, it would have meant ten thousand dollars a year to me.

" 'Two years ago I gave up my private practice altogether in order to get more time for original research and for my work at the Dental Institute. I should now like to give up the latter and devote all of my time to laboratory work, and am only waiting for Carnegie or some other well disposed man to endow a laboratory for this purpose.'

"Another says that research work has cost him in money and time approximately forty thousand dollars.

"Another writes that his research work has cost him ten thousand to twelve thousand dollars and adds: 'The most expensive experiment of all has been to attempt to interest the profession to accept the truth of the experimenal work made. This has cost me between twenty-five thousand and thirty thousand dollars, and it has taught me one lesson, and I regret exceedingly to say it has taken many years to impress this fact on my mind—that the vast majority of the men in the dental profession were more greatly interested in the almighty dollar than they were in the salvation of the human teeth.' "

The patent man in dentistry receives some compensation for his work, and surely the research man should have the same encouragement. Talent of any kind has a right to secure for its possessor the rewards to which study and labor are entitled in any calling.

Financial remuneration is a stimulus that urges most inventors to the evolution of ideas that result in labor saving devices. Because of the financial stimulus we have many inventions that without the financial remuneration we would not have. I think the same general rule would apply to the scientific research man, although we could not expect to remunerate him in the same manner.

Let us take for illustration a high pressure syringe to show how we contribute to the patent man and not the research man. You pay ten or fifteen dollars for a syringe of which the patentee receives his part, but how much are you contributing to the scientific man to tell you how or whether it is a good safe thing to use at all?

The mechanical side of dentistry has developed far ahead of the scientific and probably this can be attributed to no other cause than this financial stimulus.

Research work will probably never be done by the rank and file of the profession, but we can encourage and support men who are fitted to do it, want to do it, and will do it.

Let's have a fund from each state and add them together for a national fund to be controlled by one or more representatives from each society, as successful results can only be secured by general effort.

In this way we will show the public and other professions that we are willing to make a personal sacrifice for our own benefit, and then we will likely find some philanthropist willing to endow an institution in which to carry on this line of work.

We can then select men to carry on and direct this work, and have them relieved of the necessity of practicing dentistry between times. A dentist cannot do his best by being compelled to stand on his feet all day long and do research work at night.

Can you imagine what a force it would be for dentistry to give such men as Kirk, Miller, Black, Cook, MaWhinney, Buckley and many others our financial and moral support in this work?

This seems to be an age ripe with endowments, as hardly a day can pass but what you can pick up a newspaper and read of some noble gift for the good of humanity and many of them are for less worthy and needy causes than dentistry.

You can hardly think of a profession or calling but what is receiving outside aid or help.

Where would the farmer be without the aid of the agricultural departments of our government and the states?

Consider the medical profession and many of the arts and sciences.

We even have an actors' fund and a jockey club fund and now comes last, but not least, a base ball fund.

Surely dentistry is strong enough and worthy to reach out and get some of these good things. Shall we sit idly by and expect them to be thrust upon us or are we going to reach out and secure them ourselves?

The question that confronts us is: Shall we, who are the most interested in these things sit quietly by and expect others to do for us that which we should do for ourselves?

Illinois is in a better position than any other state society to take up and carry on this work.

First. Because Illinois has more men that are capable of doing scientific research work.

Why! even proud New York had to come to Illinois to select a man, that grand old man in dentistry, Dr. G. V. Black, as the first recipient of their William Jarvie gold medal.

Second. We have more men interested in society work, and it is here that the research man can best expound his conclusions and by his personal contact with the members of the profession they will naturally become more interested in his line of work and in turn will be more willing to help in the work financially, and by the encouragement of their expressed appreciation.

Third. We have shown that we can "do things" in dentistry, and the dental profession throughout the world is probably watching us. Let us set the pace in this as in many other things.

Our size means for us to do more and I am sure we have the ability, numbers, and I hope the money.

Our lack of appreciation of scientific research work can probably be summed up in the following few words: It has cost us nothing in time or money.

This paper might resolve itself into the following question: Do we want more scientific research work and, if so, how are we going to get it?

In answer to which I would make the following suggestions:

Take the steps the New York Society has taken, enlarge upon this so as to have practically a national organization, and while doing these things solicit endowments.

Go at it with some push and energy, start it today and certainly success will crown our efforts.

PYORRHEA ALVEOLARIS.*

BY T. A. HARDGROVE, D. D. S., FOND DU LAC, WIS.

The subject assigned to me to present to you for discussion was that of pathology. But, after same reflection, I concluded that pathology was too vast a field to permit of opening up more than one of its phases for discussion, and as I believe pyorrhea alveolaris to be the one phase needing discussion most of all, I will confine myself to that.

Under the head of etiology and pathology, I will attempt to enumerate some of the causes and conditions that seem to me to be responsible for this malady, and which are not receiving the amount of scientific research that the importance of this disease demands. Pyorrhea, in the beginning, does not intend to be other than a harmless temporary disease, but through failure on the part of the patient to give heed to its presence on account of absence of pain and a lack, too, upon the part of the dentist to make an early diagnosis and institute prophylatic measures to check its progress, it is further encouraged upon its excursion of peridental destruction and tooth exfoliation, until it is too late to save at least the teeth that have been extruded and cast off.

It is impossible to single out any one cause as the one to which to attribute pyorrhea alveolaris, as it is, I believe, due to a combination of pathological conditions. This disease comes as a result of a dying peridental membrane, caused by a depraved peridental circulation, as the result of an injury received either from traumatic, chemical, bacterial or systemic causes, aided by local conditions, any and all of these giving rise to an inflammation by which we get an engorgement of the blood vessels, partly by the inflammation present and as the apparent result of loss of control of the nerve endings that have to do with the circulation at those locations. Having then reached an inflammatory stage where an epithelial exfoliation takes place acting as a nucleus and furnishing a roughened place for the formation of the so-called tarter, or more properly, a concretion. The exudate of blood plasma is now present, as it is attracted to locations where inflammation is at work. The deposit adds to itself from such salts as are then present, the relative hardness depending upon the amount of mineral salts entering into its composition.

---

*Read before the Fox River Valley Dental Society.

The formation of deposit will take place in whichever way the peridental membrane will die first or in whichever direction the field is ready to receive it. Having now the mechanical irritative advantage of the deposit to aid the progress of the disease, the blood and plasma being present in larger quantities, a suitable media or pabulum is prepared, the pus organism steps in and infects the material that is present, dissolving the albuminous portions, leaving behind it the salts to crystallize and form the deposit, and, as the albuminous portion is dissolved and broken down in the form of pus, the salts that are not soluble take form and we get pus sinuses with pus flowing from them and we have true phyorrhea alveolaris.

By traumatic causes, I mean, such as would come from an overworked peridental membrane or an over-worked portion of the membrane due to an improper occlusion, or as the result of accident.

Dr. C. S. Case of Chicago, I am told, has made the statement that he has cured pyorrhea by the regulation of irregular teeth, and I believe he is justified in the assertion, as by the regulation of the teeth by his marvelous skill, he produces a normal occlusion giving to each tooth its proper amount of exercise. Let me illustrate. Take a certain number of horses and give them just enough exercise to keep them all in normal health. Now, if you were to allow one or two of them to remain idle in the stall, the horses standing idle would in time show signs of broken health, not so soon, however, perhaps as the horses overworked from doing extra work placed upon them because of the idleness of the horses left in the stall. And by chemical causes, I mean, such fermentations of food products as may in a protected location cause sufficient irritation to induce abnormal capillary circulation, thereby producing an inflammation. Bacterial causes consist in the introduction of the pus organism and such other bacteria as may produce an inflammation. They may be tubercular, diphtheretic and the bacteria known as actinomycosis and syphilitic, if that be a bacterial disease.

Systemic causes are not so numerous as many of the profession would lead us to believe. I am not sure that there are very many systemic causes contributing to the origin of this disease aside from tubercular and syphilitic conditions. Were you to ask me if I did or did not believe that diabetes or Bright's disease is present with pyorrhea, I would answer that I thought they ofttimes were. Were you to ask me if I thought them responsible for the disease, I would say they are not. I believe that many of the so-called systemic causes are but the result of the disease rather than the cause. I have many times known of sugar and albumen in the urine of people afflicted with pyorrhea alveolaris to disappear entirely in some cases and a great many times lessened when the pyorrhea has been relieved, and what is more reasonable than to suppose that pernicious aenemia, which is said to consist in a great destruction of red blood cells in the liver as the result of poisons taken up by the portal circulation from the intestinal tract, may be due to infectious bi-products emptied into the intestinal canal from the mouth cavity. So much importance is placed upon this idea of infection from the mouth, that few surgeons undertake intestinal surgery in this age without first insisting upon a thorough sterilization of the oral cavity, and it is said by many that one great cause of appendicitis may be attributed to infections coming to it from that source.

PROGNOSIS AND TREATMENT.

Pyorrhea alveolaris is both a preventible and curable disease. The length of time usually required to establish a cure is from three to four weeks after a tooth has been treated. So far as checking the disease is concerned, that part of the cure takes place immediately after the operative interference, the balance of the time being required by nature for granulation, regeneration and organization. The treatment of this disease should be approached just as any minor surgical operation.

A careful examination should be made with a delicate instrument, called deposit finder, not so much for diagnosis, as to determine the extent of the disease. Having that carefully done, you will anesthetize the field of operation with a one-half of one per cent solution of cocaine released from a large-sized hypodermic syringe through a long blunt end, flexible needle, using rolls of cotton on each side of the alveolus to absorb the excess. With a carefully selected instrument, one that will pass beyond the deposit, remove it with a pull stroke, if possible; if not, with a push stroke. The deposit must be removed at any rate. With the deposit positively and carefully removed, the pus sinus should be flooded with a warm solution of lactic acid containing a slight amount of oil of sandal wood. This fluid has two purposes to perform: The dissolving of small particles of concretion that we may not have been able to detect with the instrument and a cauterization of the walls of the cavity. The object in using lactic acid in preference to the other acids is that it cauterizes it just enough to induce granulation and not enough to destroy the vitality of the surrounding tissue. Oil of sandal wood is placed in the solution for its effect upon the mucous membrane and as an aid in the solution of the small particles of concretion. The tooth or teeth operated upon should be ligated to the adjacent teeth to obtain as much rest as possible, and that part of the work left alone for three or four weeks. I do not believe it is wise to polish with pumice until three or four weeks have elapsed. By that time union will have taken place and there will be no danger of the pumice working down into the pus cavity between the gum and roots of the teeth, acting as an insoluble irritant. Oftentimes the pus cavity will have a small opening and a large or expanded termination. In these cases it is good practice to make an opening at the termination of the sac, allowing the irrigating fluid to pass through and for the purpose of drainage.

A massaging of the roots and gums should not be begun until five or six days following the operation. The object of waiting that length of time is not to interfere with the granulation that is taking place. The patient should be instructed with reference to oral hygiene and provided with antiseptic, stimulating and astringent mouth-washes and a tooth powder, if considered necessary, containing not too much of the gritty substance.

Following this procedure, and with the co-operation of our patients of average intelligence, this branch of our work becomes most attractive, gratifying and profitable field of service.

CHANGES INCIDENT TO CORRECTING DISTAL OCCLUSIONS OF THE LOWER ARCH.*

BY WILLIAM G. LAW, D. D. S., BERLIN.

The abnormal conditions known as distal occlusions—or those belonging to Class II of the Angle classification—have long been the subject of much careful investigation. Gradually, old theories have given place to new ones, and old modes of treatment have become obsolete and have been relegated to the past, newer, more scientific methods having taken their place—methods which may give to the patient the greatest, the finest of results, and with a minimum of annoyance and discomfort.

---

*Read before the American Dental Society of Europe, Rome, March, 1907.

These strides in the game of progress have not been rapid, nor have they been made without great concentration and devotion by the men who stand foremost in our profession today. It is because of their hard, perisistent, never-give-up efforts to find a solution of the difficulties with which they for years have contended, and at last being rewarded that we today have an established science, known as Orthodontia, whose basis and theory are built upon as sure a foundation as is any science in the world.

The Discovery by Dr. Angle that diagnosis could always be accurately made, and from a certain point, settled forever a question that was as weighty as it was troublesome. Now diagnosis has become, in all cases, clear, and, if well followed, we are able to bring about the exact results that we so long in vain have striven to accomplish. But this correct diagnosis must be accurately followed. No compromises. No half measures—but followed as one must follow all laws or principles, correctly, thoroughly.

Distal occlusions are conditions where the lower arch is distal to normal in its relation to the upper arch. Both sides of the arch may be distal, or it may be that only one side is at fault.

In the past diagnosis has been wrong in placing the fault in the upper arch and jaw. It has, until recently, been generally supposed that the upper arch in these cases, especially where the upper incisors were greatly protruding, was mesial to normal, little or no attention being given to the lower arch and jaw. Later it was considered that both upper and lower arches were at fault. Now we know that the upper arch is generally—we may say, always—normal mesio-distally, and that all of the abnormality in this direction has occurred in the lower arch and mandible. By the upper arch I refer to the molar region, and the point from which we start our diagnosis is the first molar. This theory was brought to our notice by Dr. Angle in a paper which was read before the American Society of Orthodontists, and I will read you a small part, that directly stating this fact:

"We have a simple principle to guide us to a correct, intelligent decision in diagnosis, which diagnosis is also a sure clue to a sure line of treatment, even to retention. A principle, too, so simple that experts are not needed to understand and interpret it, but any sincere student, no matter how humble, with intelligence enough to master the English alphabet, can understand this principle and apply it successfully in diagnosis, and this principle applies to every case of malocclusion in existence in a human denture today, or that ever did exist. Indeed, every case of malocclusion carries with it this principle, which is a key to its own solution, its correct diagnosis, and that key is the key to occlusion—the first permanent molars. * * * This key is not the 'guesser' or the would-be improver of God's laws, but for the student of occlusion—the interpreter of Nature's great law in the human denture."

Experience, observation and investigation have conclusively taught that the upper arch should not be retracted, but that the only movements here required are expansion to the required (?) degree, rotation of all teeth in torso relation, bringing the anterior teeth to the proper line of the arch, and elevation or elongation where necessary. But retraction of the upper arch, which is normal, can only end in one result—a loss of facial balance, a very weak lower face, and an occlusion which is not so good as it would have been had the upper arch not been retracted, but instead the lower arch and jaw brought forward to its right, its intended form and position.

The decision that the first permanent upper molars erupt and remain mesio-distally normal was arrived at by Dr. Angle after a most searching study of the facial lines, both of people with normal arches and those with distal malocclusions and those with mesial malocclusions; also a most careful study of patients treated, noting minutely the effect produced upon the features by different modes of treatment based upon different diagnoses. The result of treatment was found to be best, both as to position of the teeth and the harmony of the facial lines, from the diagnosis that the upper molars are mesio-distally correct, and therefore not to be retracted. Perhaps this seems a very hard and fast rule to follow, but once it is followed, the results will prove its truth.

When we try to consider why it is that the upper molars are mesio-distally normal, we must go back to a development of the teeth and jaws. We know that at birth the first molars are the only ones of the permanent set which have taken their positions or are so far developed. In the upper jaw, which is firmly held in position by many surrounding bones, the erupting first permanent molar is helped in every way to maintain a constant normal position. Even the abnormal conditions so common in the nasal tract have no effect upon its mesio-distal position. Naturally, as the pressure of the tongue is removed from the roof of the mouth and the inside of the teeth, the arch contracts, to some extent affecting the molar region, for the pressure of the muscles of the cheeks cannot help but affect the arch buccolingually, more or less.

When the first molar erupts it has no tendency to go backward on account of the second and third molars. It has no tendency to move too far forward because of the temporary teeth. However, its constant normal movement during the development of the arch is forward, downward and outward as the arch necessarily becomes broader. When maturity is reached the first molar occupies a position farther forward in relation to the rest of the head than the second deciduous molar occupied at the age of six years. In other words, the forward growth of the maxilla has been greater than that of the rest of the head, so much so that at the age of six the relative position occupied by the second deciduous molar is distal to the position occupied by the first permanent molar in relation to the rest of the head at the age of twenty. Thus you can see the great necessity of having all of the teeth present which should properly, at any given age, be present. Forward development goes right on, and if any of the teeth of the temporary set are lost before it is time for them to be lost, "the teeth anterior to it on that side will be the ones to suffer—they will be too far distal" (Angle).

A statement was made during the discussion of the papers read at the last meeting of this society that Dr. Angle did not make such rigid claims, regarding the constancy of the upper first permanent molar, as I had led you to believe; but I can assure you that Dr. Angle meant all he said and more, too, and that today he is firmer in his opinion than ever upon that point—that the upper molars are mesiodistally normal and should not be retracted.

If that theory is correct—and we believe it is—then why has it been necessary to retract the arch at all? Again quoting from Dr. Angle: "Now, why should we move the upper molars distally if they are in their normal positions in these cases? Simply to do the best we can to strike a balance between the normal in the upper and the abnormal in the lower. If it were practical to 'jump the bite' instead of the occlusion only, we would, in every case of this kind that I have ever seen, come the nearest to the ideal in establishing facial requirements, but we now know, at least some of us think we do, that what really does take place when we 'jump the bite' and maintain the normal locking of the cusps long enough for this occlusion to become permanent, is that in reality the mandible gradually slides back to its original or approximately original position and relation with the skull, the crowns of the upper teeth having been tipped more or less distally, while those of the lower jaw have been tipped mesially, so that, in reality, we have accomplished, after many months of difficult retention, merely the jumping of the occlusion, or what we now aim to accomplish and do accomplish easily in a few weeks by means of the Baker anchorage. Yet this is not the ideal, but is the best we can possibly do, hoping and believing that the normal relations of the teeth with stimulate and tend toward the normal growth of the mandible. And this principle and result will hold good quite as well in the third class as in the second. Here is a statement which may surprise you. I have yet to see one of these cases where we did move the upper molars distally, together with the teeth anterior to them, that it did not show proportionately detrimentally in the contour of the upper lip, yet the compromise, as I have said, is perhaps the best we can ever do."

In so saying Dr. Angle placed his seal upon his theory. He believes, yes, he knows, that he is right, and all will acknowledge it soon or else fall behind in the procession of progress. But, although this theory is correct, there was this difficulty to be met—that of bringing the lower jaw to its proper position, and then keeping it there.

Our basis of diagnosis is complete. Our guideposts are firmly placed. The only part now which must be overcome is—how can we make the face full enough and have it remain so? We must obtain results from our treatment that will bear the inspection and criticism of the best of artists—men who have made a life study of balance and harmony.

Just because you may have obtained a condition of normal occlusion is no sign that your case has received the best result possible to obtain. Unless you bring the face to a good balance you have not accomplished all that is possible. Both arches must be placed in correct harmony with the rest of the head, as well as be in normal occlusion with each other.

I am fully aware that the reciprocal movement of both arches is the common mode of practice today, but this retracting of the upper arch, and consequent weakening of the lower half of the face, is a movement which is no longer necessary. We are able to bring the face to the right degree of fullness, to harmonious balance, and have it remain so. It really is possible to attain the ideal, then. We have said that the entire abnormality, mesio-distally, is to be found in the lower arch and jaw; that being the case, we will turn our attention to that part now, and see if we cannot explain why the mandible is abnormal, and, when so, if it is not possible to reform it so that it will be the shape, and occupy the position that nature intended for it.

First of all we must ask this question: What is the cause of these distal malocclusions, and what is the actual condition of abnormality in the lower arch and jaw bone? We will have to go back to the beginning and see how this state of affairs is brought about. All cases of distal malocclusions have as a present or past cause some abnormal condition in the nasal tract, most generally adenoidal growths. When nasal breathing is hindered or stopped, the respiration, naturally, is transferred to the mouth. In order to have mouth breathing, the mouth must be open, and this necessitates the depression of the lower jaw. When it is depressed, either voluntarily or involuntarily, the muscles of the lips and cheeks are put on tension, and, as time goes on, the form of the bone becomes altered. As development goes on, this abnormal form becomes more marked. The bone, then, is strongly influenced by the abnormal muscle pressure, and its forward development is to a degree stopped. It is stopped exactly the amount that the lower arch becomes distal. This change which takes place in the lower jaw is not a stunting or an under-development, but merely an altering in its shape or form. Let it be distinctly understood that there is just as much bone substance in the mandible in these abnormal cases as there would have been had the mandible developened with the body of the bone further forward. The fact that many of these cases have small chins counts for nothing at all, for we find just as many people who have comparatively good occlusions who have not very good chins. As a rule, I have found that these cases have good chins, and that they have good features, but that they are all out of harmony.

Where, then, does the abnormality take place? The tension of the muscles of the cheeks causes the greatest change to take place at the angle. The muscles of mastication, especially those attached to the coronoid process, the masseter and the temporal, are also put on tension, and the neck of the condyle is also changed to some extent. It is easy to see that the mandible has been simply abnormally developed, and that this refers to its position and shape, not to its size. Look for a moment at this bone and see if it is not altogether very reasonable that what I say is true. Here we have a mere shell of bone, very curving, very cancellous, and which is filled with developing teeth and vessels of nutrition in large numbers. At birth this bone is but slightly united at the symphysis by cartilagenous tissue in which are found bone nuclei. During the first year and a half of infancy it unites from below upward and sends forth some twelve teeth. As development progresses a process is sent forth, its purpose and function being to support the teeth. It is developed for the teeth, and, if the teeth are for any reason lost, it also disappears. As the mandible develops, and as the teeth one after another erupt, this process becomes nearly as great a portion of the body of the bone, as the bone itself. The roots of the teeth extend through this process, however, and into the bone proper. At or near the angle of the mandible we have at the age of five three unerupted teeth which are more or less formed. The crowns of the first and second molars are fully formed, and the third molar is developing. This bone being such a delicate one, merely a shell containing so many developing teeth, and not being surrounded by other bones, as is the maxilla, and being capable of such a great variety of movements, through the muscles which are attached to it, it is easily influenced by the slightest of forces, and, consequently, any condition which would cause the mouth to be open the greatest part of the time would cause abnormal tension on the muscles of the cheeks and the temporal and masseter muscles which are attached to the coronoid process, and the result always is a change in the form of the bone, with the greatest change at the angle. Naturally, this is only slight at first, but we know that all these abnormal conditions—as we may observe—do not and cannot remedy themselves, but, as with all abnormal conditions, if not corrected, they grow continually worse. They develop into all the different types which come under the head of Class II of malocclusions.

When nasal breathing is re-established before the lower molar has taken a distal position, then the development will go on normally, but if the molars have taken a distal position mechanical aid will have to be given in order to make them assume their correct forward positions.

The mandible, therefore, under this abnormal tension caused by the mouth necessarily being open, has become changed in form—the angle having become less obtuse. Some have said that the condyles have been forced backward. But this is a movement which is not possible to any degree because of the surrounding parts. But, if the surrounding parts did allow of a backward movement it would not be possible to produce enough muscle tension in that direction. There are no muscles which would, because of this abnormal respiration, have any tendency to force the condyles distally. I have made much observation upon this subject, and have made examinations on hundreds of skulls in order to determine this point, and in no case have I found that because of distal occlusion of the lower teeth the glenoid fossa has been changed in any way. One reason given for this condition of distal malocclusion is that the lower jaw is forced backward because of narrowing of the maxilla. That the upper arch becomes narrow, more or less, is very true, but it becomes narrow for the same reason that the lower jaw becomes distal, and the effect upon the lower is always before that upon the upper. The normal position of the cheeks and the inside pressure of the tongue are as necessary for the shape and forward development of the lower jaw as it is for the upper. Only, in the case of the upper in these cases, the abnormal effect upon the bone is a narrowing one, with the anterior region receiving much more than the posterior region.

Now let us for a moment see what structures we have behind the condyles that would make it out of the question to have any distal movements of the condyles. The petrous portion of the temporal bone is very thick and heavy. The glenoid fossa is on the external surface. Behind the fossa is found the external auditory meatus, the tympanic plate forming the posterior surface of the fossa. There is a small process, called the post-glenoid process, which comes down just behind the condyle. "In some animals this process is very large so as to prevent the condyle from any backward movement in case of heavy strain in mastication" (Humphries).

See the difference between the development of the upper and the lower jaws. The constant movement of the upper is downward, outward and forward. In the lower jaw the conditions are quite different. When the child is born the mandible is nearly straight, with little or no angle, the coronoid being only slightly higher than the body of the bone. The condyle is but a small tubercle. Slowly as development goes on, the body of the bone grows longer and larger and the angle appears, which, from being very obtuse, or nearly a straight line gradually decreases, until, when adult years are reached, the angle has become one of about 90 degrees, or a right angle. Then, as age progresses, if the teeth are lost, the angle again increases until we find a very obtuse angle again. So we see that the natural tendency of the mandible is to decrease its angle as development progresses. All this is under normal conditions. When an abnormal condition is present, such as to cause the mouth to be constantly open, the tension upon the muscles increases the natural tendency of decreasing the angle, and causes therefore more bending than would naturally have occurred. This statement can therefore safely be made:

In all cases of distal occlusion the angle of the jaw is less than it would have been had the occlusion of the teeth been normal.

When we know what the causes are which produce the malocclusions, and when we know what the abnormal change is that has been brought about in the facial structures, it becomes plain what we should strive to accomplish in order that the balance and harmony of the face should be as near the intended form as possible, as well as to bring the arches to their best relative position and normal occlusion. In order to accomplish this great change it will be necessary to reform the mandible proper, as well as reform the process and rearrange the teeth. Since the upper arch, we affirm, is mesio-distally normal, we must accomplish all of the movement in this direction upon the lower arch and jaw. The bone must be bent and made the form it should have naturally developed.

In the past there have been two theories regarding the bringing forward of the lower arch. The one which has been generally accepted is that the lower arch and jaw are bodily (?) brought forward and the teeth are firmly retained in this position. Slowly the jaw bone proper slides back to its old position, leaving the process and the teeth in a forward, slanting position.

Although this is more or less the explanation of the movement which has taken place, still, it is not the whole truth. For, without question, even under that method of treatment it would be absolutely impossible for the bone to slide bodily back to its old position, on account of the great strain put upon the ramus and processes by the muscles which control the action of the jaw. It unquestionably becomes partially reformed. This is easily proved by studying the faces of corrected cases long after all appliances have been removed. The face by the treatment has undoubtedly been made fuller, not only the mouth but the chin, and, unless the mandible itself had undergone a change in form this would not be possible, but instead, we would have a gradual slanting backward of the features from the nose to the end of the chin—which, by the way, is not an uncommon thing to find on patients, where the teeth have been corrected according to old ideas, which ideas prevail, perhaps, somewhat today.

Another theory regarding what occurs when the lower arch and jaw are brought forward is that the jaw is "jumped" forward bodily—and then retained, partly by habit and partly by an appliance, until finally the condyles become articulated in a forward position and the glenoid fossae becomes filled in with the bone, thus preventing any distal movement afterward of the condyles or the teeth.

When we investigate this theory thoroughly we see the utterly untenable position it endeavors to maintain. The natural position of the condyles is in the glenoid fossae. Although this articulation is so constructed as to allow of a great variety of movements, yet the forces which are exerted upon the various parts making up this articulation by the muscles of mastication operate so forcibly that any attempt to keep, constantly, the condyles out of their normal places will end in but one result, failure.

We know that this is an utterly impossible action to accomplish and therefore not worth any serious consideration, and for the following reason: Is there any appliance or any other means by which we can positively keep the condyles forward? We are compelled to say, No, because what would happen when the patient laughed, talked, sang, yawned or swallowed? Does any one mean to say that one can perform all those acts and still keep the condyles forward all the time? The condyles by the muscle action seek their normal position always. Depending upon the age of the patient, he can bite back to the old position until after some months of retention. What is the conclusion which has been drawn? That new fossae have been formed—and why not? Simply because it could never be accomplished, and for the reason that the structures surrounding the fossae are not so constructed as to allow of such a thing being possible; and if they were, the muscle action would forbid it.

What really does happen in those cases where the "bite is jumped" is that already described under the first theory. The final result has been somewhat the same—the difference being in favor of the former, as they have not endeavored to jump the bite, but to bring forward the lower arch, which is quite another matter. Proof that a new tempero-maxillary articulation has been, or could possibly be formed, is entirely lacking. Clinical evidence goes to prove that this theory has no scientific basis, but is merely based upon opinion.

The theory which is most scientific and which, if followed, will allow of perfect results is that in correcting all cases of distal occlusion, or those belonging to Class II, both divisions and subdivisions alike, the jaw bone itself should and must be made to undergo a reformation and that the distal occlusion may be made normal occlusion without any advancement having been made in the condyles; that, the mandible having abnormally developed, under the evil influences caused by nasal occlusion and consequent mouth breathing, the angle becoming less obtuse than it should be, the neck of the condyles and other parts of the bone having been abnormally formed also, more or less,—so much so that the lower arch has developed in distal occlusion—the bone itself must be brought back to its originally intended form and position, in order to give to the face the proper contours and harmony, as well as bringing the teeth to a better relative position and establishing normal occlusion. By applying the proper force upon the mandible and having the patient avoid, strictly, any inclinations or habit of forward biting, we are able to reform the entire bone and so attain the ideal results.

How nicely and easily our brother the orthopedic surgeon works. He reforms the malformed limbs and also the body, and all of the power is applied through the tissues to the bones to be reformed. The appliances used do not interfere with the natural use of the part being treated—and yet, slowly but surely the crooked limb or back becomes straight, or normal.

Why, then, must we not be as scientific and strive to accomplish the results we should? If we do not reform the bone, in reality we are simply changing one deformity to another, which, although it is a lesser one, is still a deformity—because it is not correct and normal.

The muscles of mastication all aid us in this treatment. There are no muscles of mastication which have their attachment on the body of the bone—there are no attachments anterior to the angle of the jaw. Let us see what they are. Gray's Anatomy gives us the following classification:

"The jaw is depressed by its own weight, assisted by the platysma, digrastic, mylo-hyoid and the genio-hyoid." All of these muscles are attached anterior to the angle, but are depressors,—are not muscles of mastication.

"It is elevated by the temporal, masseter and int. pterygoid muscles."—The action of these muscles in these cases would be to alter the neck of the condyles. No attachment of muscles anterior to the angle.

"It is drawn forward by the ext. pterygoid, int. pterygoid and the ext. portion of the masseter muscles." All of these are attached distally from the angle, or at angle.

"It is drawn backward by the posterior portion of the temporal, and deep portion of the masseter muscles." No attachment anterior to angle.

So all of these muscles have only transmitted action upon the body of the bone and lower arch. In spite, therefore, of what might seem to be a tendency in the jaw to become more obtuse, the actual development of the mandible is constantly toward a right angle.

The most conclusive evidence—that we can reform the mandible—which we have is the result of treatment on the facial lines. The measurements from the middle of the tracus of the ear to the end of the chin are always greater after treatment than before. And this measurement shows true movement, because the jaw is not in a false position—the condyles are in their normal places—the glenoid fossae. When distal occlusions on but one side are corrected,—where we have but one side of the jaw coming forward—the face is also made fuller and the chin is brought forward also. What more definite proof do we require? Is it possible that it would still be claimed that it is simply the process which has been changed? Could the chin possibly be advanced by any such means? Could the face be balanced by only advancing the teeth and process? Such reasoning is not worthy the consideration of science.

And does it look reasonable to think that these cases have mandibles which are undersized? Does any one present believe it? Has he any proof of it? In the accompanying illustrations please note particularly the size of the mandible in each face. Study its form and position. Simply because they appear, before correction, undersized is no proof at all. Do they appear undeveloped in the corrected faces?

The reason for such belief lies in the fact that the lower jaw has received only a part of the reforming it should have received. But if the bone is fully reformed, to its correct, its intended position and shape, the face will be full enough—there will not be an appearance of an undeveloped mandible, and the relation of the arches with one another and with the rest of the head will be correct, for it will be normal.

THE CAST INLAY.

BY W. H. TAGGART, D. D. S., CHICAGO.

Mr. President, I would certainly be remiss in my duty if I did not appreciate the size of this audience. I feel that you have come to see a process which will, to my mind, and to the minds of my friends who are interested in it, revolutionize a certain branch of dentistry.

It seems to me that an era of almost painless dentistry is coming. I say almost painless because it is not absolutely so. As long as patients are human they will suffer pain whether they are hurt or not. At the same time, I feel that this process will make it possible for men of ordinary ability to achieve the same results as the high grade men. It is not only going to make the man of ordinary ability do the work which is now done by the high grade men, but it will be possible for high grade men to do work which they never dreamed of before. It is simply a process of mechanics. In the casting or molding of a piece of metal which is to fit any place, in other lines of business it is only necessary to have an approximate fit; they expect to adjust it to its place. With iron, if it shrinks and the cast is too large, the pattern is changed, so that the pattern does not represent the size of the finished casting. In that way they see-saw back and forth till they finally get a pattern which, when molded and reproduced in iron or any other material the shrinkage which takes place is compensated for by the amount of extra material in the pattern. Now, in our own line of work we need an exactness that no other line of work requires. The highest grade watch in the world today is not as accurate as ought to be a gold inlay. We all use the remark "as fine as a watch," but a watch is only fine by comparison. If a monster locomotive had as

---

*A lecture delivered before the Chicago-Odontographic Society, April 16, 1907.

much lost motion in it as a watch has, it would tear itself to pieces, and the locomotive today is a finer piece of work mechanically than the finest watch made. The exactness of fit necessary in our own line of work makes this system, it seems to me, almost ideal. We do not dare to have a pattern which has to be altered in outline. The surface against which an inlay is to fit is so exceedingly irregular that we could not compensate for it by an addition to the pattern. We must have something that fits after it is molded without any further adjustment except the outside polish.

In the process of filling teeth with gold inlays, it has been a question of burnishing the matrix to the seat. Cavity preparation is practically the same as in any other line of gold inlay work. The matrix was fitted more or less properly, depending on the skill of the dentist, but after he had the matrix burnished to its seat he really felt in his heart that the only place it fitted was the margins he had burnished. If after these margins are burnished and the filling is put to its seat, there is occasion to do any grinding to correct a faulty articulation, what happens to the best inlay? You will immediately grind into the territory of the cement, showing that the surface which is in contact with the tooth proper does not come in the same close adaptation to all the walls of the cavity as the margins did. With the molding method a perfect fit may be made throughout the entire area of the cavity walls. The most ordinary one of you can make a fit which will be equal to the best that can be done by anyone, but the artistic end of it will depend upon your own artistic sense. The first process is to make a wax inlay in the cavity. The wax is easily shaped and formed to the proper contour and occlusion, and after this has been done, with as much artistic ability as you may, the balance of the work is merely a willingness to attend to detail. It is not a question of the personal equation at all, but simply one of mechanics.

I have felt for a good many years that there should be some improvement in inlay work, that we were almost to the limit, because there has been no improvement made in gold inlay work in the last ten or twelve years, except in the matter of technique. For that reason I have felt that we must go outside of the matrix and get some entirely new idea.

I will try now to demonstrate this process.

The preparation of the cavity is the same as in any other gold inlay method, and just here I would say that a steel tool has no business in a cavity which needs an inlay. I say that after a great deal of experience. You can take any of the carborundum wheels and with a coarse file, file them to any shape you may desire and in that way make a tool which will be very much more comfortable to the patient and with none of the danger of jumping over the cavity margin. The work is rapid and the likelihood of making unnecessary little undercuts which is apt to happen with a bur is avoided when you use the carborundum stones to prepare the cavity.

When the cavity is ready a piece of wax, specially prepared is forced into the cavity without drying it. The patient is then told to bite into the wax and chew on it to give the proper occlusion and articulation, wearing down the high points of the wax which otherwise would have to be ground from the filling. I then take an instrument no less sharp than an ordinary gum lancet, and trim off the excess of wax that hangs over the margins. After trimming I raise it out of the cavity while it is still plastic and unseat it, and put it back and raise it up a second time to be sure it goes in and out of the cavity without dragging, and have the patient bite on it again. That gives you a chance to correct any faulty articulation it may have. Then with burnishers I commence to smear the wax toward the margins, not allowing the instrument to stick into the wax or mutilate it. That continual wiping toward the margins of the soft plastic material such as this wax is, will give you a beautiful fit. After it has been approximately trimmed, I cool it off with a few drops of water. If it gets a little plastic in the mouth all that is necessary to bring it back to a workable condition is a few drops of cold water. After it is lifted from the cavity I hold it under an ordinary hydrant faucet, letting the water run on it for some moments. It soon assumes about the same hardness as modeling compound, and by using an exceedingly sharp knife it is possible to carve the wax into any form you wish. Then carry it back to the cavity and gently push it into its place, and burnish the margins again. Take a piece of ordinary linen tape, put some vaseline on it and pass it between the teeth as you would in polishing a gold filling. By just rubbing it without any pressure you will smear it to the margins without distorting your proximal contact, and the vaseline keeps the wax from sticking to it. After rubbing that way a short time you get a highly polished surface and when the inlay is finished, you will have very little grinding to do. Take a piece of cotton about as big as your little finger, and put that in vaseline with tweezers, and wipe the surface of the inlay. Do not mistake the shining surface that the vaseline itself gives it, but keep on rubbing, and in a few minutes you will have an absolutely polished surface, which will not distort any of the cusp lines. By doing this in an artistic way, and getting the wax as smooth as you can, there is little to do on the finished inlay. Chill this last time very thoroughly and then lift it out of the cavity.

This little wire I hold in my hand is about 1-16 of an inch in diameter and ¾ of an inch long, and is called the sprue wire. I warm the very tip of it, holding it in my fingers so as not to overheat it. I make it just warm enough so the end will stick to the wax. I have the wax inlay on the end of that wire, and this wire forms the hole into which the gold is subsequently poured. That wire is put into any part of the filling which would not be dangerous to the shape or artistic lines that you have worked out.

This wax inlay on the wire is ready to be covered with investing compound. One of the greatest difficulties I had in working out this process was to get rid of air bubbles. To overcome that, I take a small quantity of investment compound no larger, say, than half a pea, and put it on the cavity side of the inlay, and then coax it ahead of an instrument, being sure to watch it so that no air bubble gets ahead of it. The vulnerable points are down in the corners that would easily confine a little air bubble. My friend, Dr. Perry, is responsible for the remark that to handle plaster properly, you should put it where you don't want it, and then push it where you do want it. That is a very good rule here.

After a generous mass of investment material has been placed around the wax it is put into a flask which is a section of a brass tube cut off, and is about one inch or one and one-quarter inches long, and I have yet to find, with one exception, any investing material in the market that I can fill that tube with and get thoroughly dry after melting the wax without the investing material sliding out of the tube. I had to find an investing material which would not do that and at the same time would have a smooth surface to cast against.

After the investment is hard in the flask the wire is pulled out leaving a hole the size of the wire leading down to the inlay. A scooped-out place on the surface has been formed by the top of the flask which makes a little crucible in which to melt the gold. That crucible is formed there each time by the flask cover. When the gold is put into the crucible and melted you might think it would drop down into that hole but it does not. The spheroidal tendency of the melted mass to keep rolling on itself, and the fact that air is inside of the cavity prevents the gold from dropping down into the hole. The flask is put over a Bunsen flame and that melts the wax and it is absorbed into the investment and disappears.

It leaves absolutely no residue. It has been filtered three times so as to get rid of any foreign substance that might be in it.

The gold is placed in the crucible and melted with the nitrous-oxide flame into a thoroughly bubbling boiling state, and then with one movement of a lever the flame is turned off and a pressure of nitrous-oxide thrown on the gold from the cylinder so as to force it into the space left by the melted wax. This results in an exact reproduction of the wax inlay in gold, and the actual time consumed in the entire process, leaving out the necessary time to wait for the investment to harden, is about thirty minutes.

The resultant product is an inlay which precisely fits the cavity and which requires no further finishing except to polish the exposed surface. Any karat gold may be used, and I have some specimens of work which have been molded out of clasp gold. We have never been able to use clasp gold in dental work except for flat clasps for the reason that it was too hard and unyielding, but this process makes it possible to melt it and mold it.

In conclusion, this process of making inlays must appeal to any operator when he sees the perfection of results. It cannot be ignored by the older men because of the greater ease with which perfect work may be accomplished and the lessened strain on the operator, and it cannot be overlooked by the younger men because they have a lifetime of practice ahead of them and must take advantage of every method which renders their work more perfect and relieves them of the tension of difficult operations.

PROCEEDINGS OF SOCIETIES.

WISCONSIN STATE DENTAL SOCIETY.

DISCUSSION OF THE PAPER BY DR. B. G. MAERCKLEIN, ON "THE SURGICAL CORRECTION OF CLEFT PALATE AND HARE LIP."

DR. H. L. BANZHAF:

It is with a great deal of reluctance that at the last moment I acceded to the request of the president to discuss this paper, because I am not an oral surgeon, and am not familiar with the technique of the cleft palate operation from actual experience; so the best I can do is to give you a few facts as they occur to me. I am familiar, of course, in a general way with the Brophy operation to which reference has been made. The object of this method which the essayist has presented, is the avoidance of shock and traumatic injury; that is, as I have gathered it. It was a little difficult for me to follow the essayist, but it seems to me that the method presents a great similarity to or is more like the Fillebrown operation than the Brophy operation. The thing that occurred to me was that the putting upon tension of the muscle was in fact a sort of muscular massage; and this thought occurred to me: "What is it going to do to the circulation? And what ultimately will the effect be upon the vitality of the tissue?" The essayist, very properly, has referred to the matter himself by raising the question of tonicity. Now, that is an important point. Unless you have tonicity and good healthy circulation, and unless you have that which ultimately redounds to giving us a healthy wall there, you are going to have a great deal of sloughing.

I was very much interested in this new appliance. I have seen much of Dr. Maercklein's work and he gets results. The separating of the malar processes, as referred to by the essayist, would seem like a very heroic operation; but in reality it is not and it accomplishes the purpose.

DR. A. D. BLACK, Chicago:

I am very much interested in cleft palate work. I only want to express my interest in the paper and say that this society should certainly be proud to have a member who can present such a thorough paper upon this subject.

DR. B. G. MAERCKLEIN (closing the discussion):

I will attempt to answer the criticism of Dr. Banzhaf. The tension on the soft parts is not to be continuous. That is simply to be made several times a day, or if inflammation sets in only once a day or once every other day. You will be surprised how much that will yield in the course of several months, if this is followed daily. It overcomes, almost entirely, the resistance when the cleft is separated only one inch or an inch and a quarter. You can practically develop that tissue. You can stretch the connective tissue and muscular tissue so that the resistance to approximation is almost gone.

The appliance is a sort of a skull-cap, so to speak, which goes around the head and fastens, and enters into the mouth and presses upon the surface of the alveolar borders only. The pressure is no greater than can be brought to bear upon it, by the lead plates and wire, sufficient to proximate the edges. You can stop at any time. It is not attached in any way to the body. The patient can be anesthetized and the parts approximated. If you do not succeed, leave the apparatus *in situ,* and let the child alone two or three weeks until the parts spring in there, and finish with the second operation. That is something you cannot do with the wire method. You either approximate those surfaces, or your operation is a failure.

Here are a couple of models, one showing the result of a failure by the sloughing of the flap in the middle of the mouth. That is the result after the first operation. I am sorry we did not get the model of the case before any operation was attempted.

This (indicating) is a model of the same case taken about four years after the operation. There is the contraction of the full width, of the entire thickness of a molar tooth. I will also state that there were some roots in position at the first operation, which I extracted, and that contraction has taken place until the second molars completely approximate the second bicuspids. This is a case I operated on three years ago. It was for a little boy three years and a half old. That I drew together more than one-half, with the appliance, before the operation. I operated, and had an unusually good result. I exhibited the case, with three stitches still in position, before the Wisconsin State Medical Society, about three weeks after the operation. I had the little boy before my class last fall and allowed him to speak to the members of the class, and his voice is clear.

This (indicating) is the model taken last fall from the mouth, and you can also see the contracted condition as compared with the model taken three years ago. The result of this operation, I may say, has never been surpassed by anybody on earth, because it is simply perfect; he has an excellent palate, and the voice is perfect.

ILLINOIS STATE DENTAL SOCIETY, QUINCY, MAY 14-17, 1907.

DISCUSSION OF DR. J. P. BUCKLEY'S PAPER ON "PULP TREATMENT."

Dr. Arthur D. Black, of Chicago:

There is at least one reason why I am pleased to open the discussion on this paper; because I treat the conditions under consideration very differently from the methods mentioned in the paper, and I will confine my discussion largely to those points on which we differ, and among other things I purpose to attack that thing which is closest to Dr. Buckley's heart, his original formula.

I have been very much impressed in my reading on this and similar subjects in our dental literature at the lack of definiteness, and of scientific work that appears in what is published. The principal advance that we make in scientific work of this nature is through careful laboratory work and clinical observations carefully recorded. If you will review the literature of this subject, I think you will find exceedingly few reports of laboratory experiments that are valuable and quite as few good records of results of treatment. I do not recall a single article on pulp treatment in which a definite statement was made of results extending over a sufficient period of time to be of value.

I wish to impress upon those members of this society who do not already realize it that the work which Dr. Buckley has done in his laboratory has been of a truly scientific nature. He has taken a definite course and has proceeded to find out first the exact condition of the substances in the pulp chamber and canals, and has then studied the effects of various drugs upon these substances, reporting to the profession from time to time the results of his work. He has not come to us with a drug and told us that it is good to use without telling us why, and also telling us how he knows what he knows about it. He has told us the bad things about it as well as the good.

We have no right to dispute or confirm a man's laboratory results unless we have done similar laboratory work ourselves. Therefore until some one does confirm or disprove his work we must accept his conclusions, which I am quite willing to do. I think you must agree with me, however, when I say that this original formula is not the ideal one for the treatment of the cases under discussion. We will agree with Dr. Buckley that it does exactly what he says it does inside the pulp chamber and canals and if those were the only tissues to be considered, then the formula might be called ideal. But we must consider the tissues beyond the apical foramen, to which Dr. Buckley tells us this formula is very destructive, and to my mind there is always danger there. The ideal preparation would be one that will accomplish what this original formula will in the putrescent material and not be injurious to normal healthy tissue. I hope Dr. Buckley will continue his good work until he finds such a preparation.

In the use of this original formula, as outlined, we place the medicament in contact with the decomposed pulp tissue, little or none of the latter having been removed. What we are most anxious about in the treatment of these cases is to prevent apical inflammation. The plan of treatment contemplates the neutralization of the contents of the canal exactly to the apical foramen, without any effect of the drug beyond, a condition which to my mind can not be realized in many cases; either the pulp tissue near the foramen is not fully neutralized or the tissue beyond is subject to inflammation by this exceedingly irritating drug; and for this reason I do not use it. Here is a drug that is too destructive to the soft tissues to use in irrigating a sinus, why should it be used in the pulp chamber when we have no means of being certain that it will not escape through the apical foramen?

Since I began practice, I have followed a very definite plan in the treatment of these cases and I wish to give it as briefly as possible, and I will also give my results. I will mention first, the treatment through the pulp chamber. No matter what the condition presenting, the rubber dam should be placed and the field of operation sterilized by swabbing the parts with a good antiseptic before any operating is done in the pulp chamber; and before the rubber dam is removed the cavity should be absolutely sealed. At each subsequent sitting the rubber should be in place and the field sterilized before the cavity is exposed and the cavity should be again sealed before the rubber is removed. Nothing should be allowed to get inside of the pulp chamber except what the operator puts there. This has been my rule of practice, and I have not deviated from it except in cases where I have failed in my efforts through faulty manipulation or difficulties which I could not overcome. I use pure base plate gutta percha for sealing, first moistening the cavity walls with eucalyptol, as I feel more certain of it than cement, particularly when the cement is mixed so thin that it can be placed without causing pressure. Cement so mixed must, I believe, be more porous than when mixed in the ordinary way.

The fact that the pulp chamber is already full of micro-organisms is no excuse for operating without the rubber dam, nor for using an instrument or broach that is not sterile. Neither does it appear to me to be good practice to treat a tooth by partially sealing the medicine in or by puncturing the stopping with which the cavity has been sealed, as by either method the contents of the pulp chamber is certain to become infected from the mouth. In the treatment of infected cases by surgeons, more serious results are apt to occur from the ingress of extraneous organisms than from a failure to remove all of the organisms and their products that were previously present. The reason for this is that the system has already adapted itself to a greater or less degree to the toxins of the existing infection and if assisted by the relief of pressure and partial removal of the pus and organisms, will be able to overcome the remainder; certain changes have taken place in the fluids of the body to counteract or neutralize the toxins of the particular infection, but these changes have no similar effect against the toxins of another organism, therefore the new infection meets with slight resistance and becomes more serious than the old.

In cases where there is a putrescent pulp, it is my practice to thoroughly and carefully cleanse mechanically the pulp chamber and canals in all cases at the first sitting, or as soon as the soreness of the tooth will permit. Where the pulp is decomposed and the contents of the canals is more or less liquid, I think less of this infected material will be forced into the apical tissues in removing it if proper care is used, than will be in placing a treatment without thorough removal. Dr. Buckley's method to be successful requires that absolutely no pressure shall be made in the sealing. After removal the canals should be thoroughly sterilized and an antiseptic treatment sealed in. This treatment will then have the best possible opportunity to control the inflammation that is present or that may occur in the apical space. I use the term antiseptic in what I believe is its generally understood meaning in medicine; a drug which is destructive to plant cells, to bacteria, but not to animal cells. My particular objection to the use of formalin is that it is destructive to both vegetable and animal tissue.

It is my rule to leave each treatment in a week, unless there is indication for an earlier change. Following the removal of a dead pulp, it is sometimes necessary to change the treatment sooner, on account of the formation of gases, as mentioned by Dr. Buckley. It is a very great mistake to leave the cavity open for a day or so, as is a common custom. The general tendency in the profession seems to me to be to over treat; to change the treatments too frequently.

After the inflammation has subsided sufficiently to retain a treatment for a week, the root is filled, unless there is some condition present to contra-indicate a filling. Occasionally this is postponed another week, but rarely longer. I do not see how it is possible to get better results by an extension of this treatment over a longer period of time. All that can be accomplished through the root canal can be accomplished within two or three weeks and at the end of that time I fill the canal and await developments, with the feeling that if the case does not heal, it will be due to some condition outside of the root which will need treatment through the process.

I call attention to the fact that teeth will not be discolored by the use of the essential oils, if the latter are thoroughly sealed in. Hundred of cases can be shown in which essential oils have been sealed in with gutta percha, with no subsequent discoloration.

In the treatment of chronic alveolar abscess, we should learn definitely the condition of the tissues about the end of the root. It is probable that most failures in the treatment of chronic abscesses result because an exact diagnosis is not made. The most important thing to know is the condition of the peridental structures. All of the treatment and most of the possibilities of success depend on this: upon how much of the peridental membrane has been detached and how long it has been so. If the pus has followed along the side of the root from the apex to the gingival line, thus destroying a strip of peridental membrane the length of the root, and this condition has existed for some time, I believe such cases are usually hopeless. A thin, flat peridental membrane explorer should be used to determine if this condition is present.

The condition of the tissues surrounding the end of the root can generally be easily determined with a sharp, stiff, steel probe, first suggested by Dr. Gilmar. The condition of the tissues involved may vary greatly. The sinus may be simply a canal for the discharge of pus with little destruction of tissue about the end of the root. There may be a cavity in the bone as a result of absorption or caries of the bone; this cavity may or may not surround the end of the root, or in other words, the peridental membrane may be slightly injured or much of it may be destroyed. If the cavity surrounds the end of the root, it projects into the cavity, denuded of its peridental membrane. With this steel probe passed through the sinus, or in some cases through the gum and process, the exact conditions can generally be determined. It will tell you if there is a cavity, if the bone is soft-carious, if it is hard and rough as in necrosis, if the root is denuded of its peridental membrane and whether or not it is smooth or rough. If the peridental membrane about the end of the root has been destroyed and that root has been bathed in pus for months, or if the end of the root has been roughened by absorption, or if it is covered with deposits of serumal calculus, the case will rarely if ever be cured while that root end remains. Frequently the best treatment will be the extraction of the tooth. In case the root end is not much involved, the destruction of tissue being largely in the bone away from the root, then the sterilization and filling of the root canal is generally the only treatment necessary. If there is a cavity in the bone, it is a good plan to currete it, freshening its surfaces. If the surrounding bone is carious, all of the softened bone should be removed to effect a cure. Occasionally a small piece of bone will have become necrotic and separated from the healthy bone, thus causing the continuation of the abscess. We should be on the look out for such pieces and remove them. Whenever a cavity of considerable size or depth is found or made in the bone, it should be packed and irrigated frequently, to keep it in good condition while it heals from the deepest part. A mild antiseptic solution is sufficient for the irrigation and there is nothing so good as iodoform gauze for packing.

In the treatment of chronic abscess with a sinus the forcing of any medicine through the tract under pressure seems to me to be bad practice. If much of the peridental membrane about the end of the root has been destroyed, the medicine will not effect a cure; and if the peridental membrane is intact, such medication is unnecessary, as the case will heal as readily without it. Peroxide of hydrogen does much more harm than good in the treatment of these cases by forcing the infection deeper into the tissues as it expands.

Now as to the results of the method I have followed. I hold in my hand a record of every case, since I began practice, in which I have removed a dead pulp. This gives for each case the date the pulp was removed, when the second treatment was sealed in, how many treatments in all were given, and the date on which the root filling was made; there is also a record of those that have been examined subsequently and their condition. I have made a tabulation from this record which I will publish as a part of my discussion. This includes every case from which I have removed a dead pulp no matter what complications were present.

TABULATION FROM RECORDS OF ONE HUNDRED AND TWENTY CASES IN WHICH DEAD PULPS WERE REMOVED.

Year.	Number of cases.	TREATMENTS.					ROOT FILLINGS.					SUBSEQUENT EXAMINATIONS.			
		Number of days before pulp chamber was reopened for second treatment.					Immediate.	At second sitting.	At third sitting.	At fourth sitting.	At fifth or later sitting.	Number O. K. to date.	O. K. one year after treatm't.	Extracted.	No subsequent record.
		1	2	3	4	5*									
1900	5	..	..	..	..	4	..	1	1	2	1	4	..	1	..
1901	16	2	..	..	..	7	..	7	2	5	2	5	4	..	7
1902	18	..	1	1	2	9	..	5	7	5	1	6	4	..	8
1903	29	..	..	1	1	17	2	8	15	1	3	9	9	1	10
1904	27	1	4	2	2	7	1	10	9	4	3	18	4	..	5
1905	9	..	..	..	..	3	..	6	1	..	2	6	..	..	3
1906	16	2	1	..	..	5	1	7	3	3	2	13	..	..	3
Total..	120	5	6	4	5	52	4	44	38	20	14	61	21	2	36

*Or more.

This table reports one hundred and twenty cases in six years up to December 31, 1906. Under the heading of treatments, the table shows the number of cases in which the pulp chamber was reopened to place the second treatment on the first, second, third, fourth, fifth or later day following the removal of the pulp. This is given to indicate in how few cases there was sufficient inflammation to cause much pain. There are seventy-two cases reported in these columns (in the remaining forty-eight cases root fillings were made at the same sitting or the next sitting after the pulps were removed, and there was no inflammation of consequence in any of these cases). Of the seventy-two cases the following additional information should be given. In the five changed in one day, one formed an acute abscess, which was lanced; the other four gave sufficient pain to cause the patients to return to have the treatments changed. In the six changed on the second day, four were on account of pain and two on account of the necessity for hurrying the operations, there being no inflammation. In the four changed on the third day, two were on account of pain and both formed acute abscesses which were lanced, and in the other two there was no inflammation. In the five changed on the fourth day, two were in state of acute abscess when patients first presented, and in the other three there was no inflammation. In the fifty-two cases changed on the fifth day or later, one was in state of acute abscess and was lanced when patient presented; two were badly inflamed when patients presented and both formed acute abscesses which were lanced after pulps were removed; two gave little pain, but develoved chronic abscesses later and one of these two was extracted three years, the other three and a half years after root filling; in the remaining forty-seven cases there was slight or no inflammation. This gives a total of one hundred four cases in which there was slight or no pain, eight cases in which there was more or less severe apical inflammation without abscess formation, and eight acute abscesses, three of which formed before the patients presented and five after pulp removal, although two of the latter were very much inflamed when the patients first presented.

Under the heading of root fillings, the table shows that four root fillings were made at the same sitting at which the pulps were removed, forty-four at the second sitting, thirty-eight at the third, twenty at the fourth, and fourteen at the fifth or later sitting, indicating the progress made. The average time between treatments was about a week, therefore in about seventy per cent of cases root fillings were made within two weeks from the time the pulps were removed, and in an additional seventeen per cent root fillings were made within three weeks, leaving only about thirteen per cent that ran longer.

Under the heading of subsequent examinations, the table shows something of the final results. Sixty-one cases have been examined recently enough to make me feel reasonably certain that they are all right, twenty-one others were in apparently perfect condition at least one year after treatment, but have not been seen by me since. For thirty-six I have no record of an examination long enough after treatment to allow a report. Of the eighty-four cases of which I have record, eighty-two appear to have resulted successfully, and two were failures. One of these was a rather desperate case in the beginning, and the other was a second lower molar, the bone surrounding which had been involved a few years previous in a case of necrosis by which the third molar was lost. So long as I can maintain the good results shown by my records, I believe I should not change methods until some one can show definite records of better results by some other method.

Dr. T. L. Grisamore:

Doubtless you all agree with me when I say credit is due the essayist because of the fact that he worked out this mode of treatment, experimented with it upon his own patients, and then presented it to us with his recommendation, instead of doing as many have done,—that is, put it in fancy bottles, giving it some mysterious name and placing it on the market at $1.00 per oz.

This formula is recommended by the essayist for the treatment especially of teeth containing putrescent pulp materials, which condition means that after the death of the cells, the territory has been invaded by putrefactive bacteria, after which a decomposition takes place in which is formed from albuminous substances, probably, first, peptones and allied substances, some being toxic; second, compound ammonias, known as ptomaines or animal alkaloids; third, nitrogenous bases (lucin tyrison, together with organic fatty acids); fourth, iodol, phenol, cresol, etc.,—and finally—hydrogen sulphide, ammonia, carbon dioxide, and water. The above named being the substances with which we have to deal in treating teeth containing putrescent pulp material.

Pulp suppuration is of two general varieties—one beginning upon or close to the surface of an exposed pulp and gradually destroying it through the process known as septic ulceration, the second by beginning in the substance of the pulp causing destruction of a part or all of the pulp through the formation of a circumscribed abscess,—(Inglis). Ulceration will frequently destroy the entire pulp with very little discomfort to the patient, while that of abscess formation will always be accompanied by severe pain.

However, there is difficulty in differentiating clinically between ulceration and abscess formation because of the fact that there may exist the same symptoms in either case.

When the pulp dies from either of these causes, we do not get putrefactive changes until saprophitic bacteria gain access, and when they do we have their characteristic fermentive changes which ultimately produce the gases characteristic of putrefaction.

We should further remember that ulceration and abscess formation take place from living cells while putrefaction can only occur in cells that have been killed by some other process.

Miller found that bacteria of pulp putrefaction without the access of air were much reduced in poisonous properties and reaction, hence we conclude that by placing formalin and cresol in a tooth containing putrescent material and hermetically sealing, we do not only seal in a remedy which unites chemically with the products of putrefaction, but we make the conditions more unfavorable for the growth of bacteria.

We must also remember that all teeth containing dead pulps do not necessarily contain putrescent pulps. If the pulps die under conditions which prevent the invasion of bacteria we have what might be termed an aseptic dead pulp. A tooth containing a pulp of this kind has no odor or moisture while a tooth containing a putrescent pulp can always be diagnosed by the characteristic odor or discharge. In treating pulps which have died from nonseptic pulpitis, if strict surgical cleanliness is practiced, we should have no apical pericimentitis. Conditions of this kind are not nearly so numerous as septic putrescent conditions but that they do exist should not be lost sight of. This condition is probably more often found in teeth whose pulps have been capped with zinc chloride or some tannifying substance, such as alum, tannin or formaldehyde.

I wish to emphasize two points especially: One is that the mode of using this mixture should be governed largely by the condition of the contents of the pulp chamber and canals. If we have a putrefied condition a mixture containing more formalin can be used because of the fact that there are substances present to unite with the volatilized portion of the mixture. While if the pulp chamber and canals do not contain putrescent material, we should use a much weaker solution if it is to be employed.

The other point is that an apical pericimentitis can be formed as readily from a mechanical irritant as from bacteria or their biproducts and formalin being a powerful irritant the utmost care must be employed in sealing it in pulpless teeth.

Dr. George W. Cook, Chicago:

About six years ago I read a paper before the Southwestern Michigan Dental Association on pulp decomposition in which I suggested some of the products that might be formed in the pulp only by an analogy to that which takes place in other tissue decomposition. I thought much about this subject and more since Dr. Buckley has stirred it up from the point he has, and I feel now very much like the fellow who read the Bible so much that he knew nothing about it.

I took a couple of my students out to the stock yards a few months ago, and secured all the teeth of animals they could carry in a basket. We broke these teeth open, and removed the pulps, as best we could, under aseptic conditions. These pulps were subjected to sterilization by a fractional process. To sterilize an agent of that kind is like sterilizing milk. For instance, we have subjected those teeth to a definite degree of heat for a certain length of time as a means of sterilization; they have been placed in tubes and various bacteria have been applied to them to determine, if possible, what might be formed in the process of decomposition.

There is one fact that has been notably ignored in the discussions of this subject, and that is, as stated by Bueckner many years ago, as well as Pasteur, that putrefactive processes would not take place in the presence of the free oxygen of the air, and with the assistance of Dr. Matthews' physiological laboratory of the University of Chicago, we have found that is true in the decomposition of pulps, and I question whether or not under these varied circumstances all the putrefactive processes are present. He does not state it as a fact I know; but we are led to believe that all of these products are constantly being produced in the decomposing pulps of teeth. As a matter of fact these fatty acids we find so commonly and so beautifully spoken of in the paper are not present in the decomposition of the pulp. Out of one hundred grams of pulp tissue we have found in only one particular instance slight traces of the fatty acids. We also found that in the decomposition processes ammonia was not formed as readily as we had thought. In the decomposition of a large quantity of proteid material, where there was practically all of the proteids we got a certain amount of these compounds. But in the decomposition of the pulp of a tooth we have connective tissue, nerve tissue, blood vessels, with certain blood pigments, etc., and I have been compelled to digress very largely from my original opinion on the decomposition of the pulp. I was of the opinion, when I read my paper before the Michigan society previously referred to, that we had a great many of these so-called alkaloidal-like substances formed, known as ptomaines, and that they had a particular effect. We have been able to find traces of them, but they are not so objectionable. Dr. Buckley made the statement, I think, that they were extremely poisonous products to the animal organism. It depends upon the tissue in which they are placed. If you place these alkaloidal-like substances in cellular structure, like the stomach or intestinal tract, or mucous membrane, in which the air is more or less in contact with them, it is very poisonous to these particular cells. But if you introduce it into connective tissue, as would be the case at the apical end of the root, I question whether it has very much toxic effect, if any. That has been experimentally proved in a number of instances.

Some six or seven years ago Dr. MaWhinney and myself experimented a great deal with different bacteria, and at that time I began to use formalin and creosote. I did some experimental work with those two agents. I was not satisfied with creosote and formalin, and I then was tempted to try trikresol, which is now called kresol. I used those two agents together, practically modifying them in various ways. I introduced them into teeth and the patients came back and began to raise Cain, and I quit using these agents. Since then I have not been so powerfully enthusiastic over kresol. The question arises in my mind whether the young dentists can afford to take chances in using these preparations in all these putrescent pulp cases. It seems strange to me that Dr. Buckley recommends this formula not only for putrescent pulps, but for acute and chronic alveolar abscesses. He may get excellent results by so doing. I do not see, however, how he can, because we have two different conditions to contend with.

One great step in the science and practice of dentistry is to know how to handle just these conditions. The rest of it is largely mechanical, and I believe we should discuss these questions with more fervor than we have. We have got different conditions to treat, as regards pulp decomposition and the taking care of putrescent pulps, and also taking care of these abscesses, and it has been a question in my mind whether we could kill all the bacteria with the same gun or not.

Dr. C. E. Bentley, Chicago:

I have used formalin in the form of a paste for root disinfection for eight years. Up to that time root filling was more or less a bugbear to me; that is to say, after each treatment of a putrescent pulp, where there had been some pericemental irritation, whenever the patient came into the office a second time, there was a look of expectancy on my face, as much as to say, Did it get well or did it give you trouble? Since I have been using formalin, I have not had any recurrence of these irritating influences. With this single treatment and with the broaches that are now furnished us by the Detroit Manufacturing Company for enlarging root canals, the method has become very simple with me. In saying this I want to give credit to whom it is due, and Dr. Buckley is that man.

I want to say a word with reference to the remarks made by Dr. Black concerning the sterilization of instruments. I said this last year, but I will repeat it now, that I believe the attempt at sterilization on the part of dentists of their instruments and the things that go into the roots of teeth is a farce, as compared to the classic and known technique of surgery. We do not practice aseptic surgery, and hence it becomes all the more necessary for us to put an antiseptic in the root canal that is powerful, and formalin in some form is a powerful antiseptic. I, for one, after having had eight years of experience with this one remedy alone in septic pulps, can testify as to its great therapeutic value, and I have yet to know of any case in which failure has occurred.

Dr. W. H. G. Logan, Chicago:

If you use this formula recommended by Dr. Buckley in putrescent conditions, you will have something for the medicine to act upon; but not in septic conditions unless they are complicated with putrescence. One of the gentlemen has said that, as a rule, we do not have a septic process resulting from putrefactive bacteria. We never have it. Putrefactive bacteria do not produce pus. Pus is produced by pyogenic organisms and nothing else. Dr. Buckley said that you should seal in the medicine in any putrescent condition, but he did not say to seal it in in any other kind of condition.

In regard to sealing in any medicine with gutta percha, you can seal it in, but the patient will go to the table and unseal it. If there is danger of forcing a little of the gas of formalin and irritating the apical tissue by pressure, when the cement is hard enough, sealed properly, it is rigid enough to withstand mastication, the patient biting upon gutta percha will force something through a lot worse.

The terms sepsis and putrefaction must mot be used interchangeably. If the septic process begins on the surface and gradually going on combines with the putrefactive changes that may occur, I would use formalin, particularly if the septic condition has progressed from the top of the pulp chamber. If there is a great amount of pus forming, and there are no putrefactive changes occurring, I would not use formalin. If there is a slight amount of pus formed, and there are no putrefactive changes occurring, I would seal the cavity with kresol and oil of cloves with cement, and would expect to get good results. I would not put an antiseptic into a root-canal where there had been septic and putrefactive processes, because I would expect to find bacteria there that I would wish to kill. Antiseptics kill nothing; but germicides do.

Dr. G. V. Black, Chicago:

If any gentleman supposes that he seals a cavity hermetically with cement, I will be very glad to have him come to my laboratory and examine any cement that he may put into the cavity. It is well known that these cements will not seal a cavity. Most men, I know, who have not specially studied the sealing of cavities with gutta percha, will fail; but if they will use it as it is recommended, and experiment with it until they can make a gutta percha filling, they can seal with gutta percha; but with cements they can not.

Dr. L. B. Torrence, Chester:

In regard to the treatment of roots, we country dentists can not see our patients as often as you city men. A great many of our patients come, during the winter season, over almost impassable roads, for distances of ten or twelve miles. To their minds, it would be a ludicrous proposition to ask them to appear at our offices four or five times for treatment.

Now I would ask Dr. Buckley what we are going to do in a case of that kind? I do not wish to be regarded in the light of throwing cold water on Dr. Buckley's excellent paper, neither do I depreciate the value of his work in research, but with Dr. Cook, I can see danger in this thing.

If this agent is an irritant, and the essayist says that it is, then we country fellows had better tread softly and slowly, until we find what the harvest will be. For while in the city, "The right hand knoweth not what the left hand doeth," in the country your failures receive a great deal of gratuitous advertisement.

Dr. Buckley (closing the discussion):

Dr. Black is afraid to seal in this remedy in a putrescent root canal, because he fears that the formaldehyde which is generated from the remedy will irritate the tissue at the apical end. I emphasized the irritating property of this agent. If printing it, I would put it in italics. I would not use this remedy as such if I had to seal it in a cavity with a temporary stopping of gutta percha. If Dr. Black can take a putrescent root and carefully and gently, mechanically remove all the putrescent contents of that root canal, without forcing any of it through the end of the root, then he can treat them successfully in the way he suggests. I know one of the most careful operators in this country who does that, Dr. M. L. Rhein, of New York. It does not make any difference how putrescent the canal may be, he goes down at the first sitting and cleanses it out, using chemicals with his broach, however. But we must remember that Dr. Rhein has mastered the technique to do that, while the average dentist has not. I am frank to admit that I can not, careful as I believe I am, remove all the contents of a putrescent root canal, in every case, without forcing some of that putrescent material through the end of the root. Because I cannot do it with safety, I want to neutralize the contents before I attempt to remove it.

I cannot advise my students in school to seal in an arsenical preparation with anything but cement. I do not doubt but what, under certain conditions, the cement shrinks; but I would not be able to sleep well if I thought my students were sealing in arsenical preparations with gutta percha.

I want to say in reference to the remarks made by Dr. Torrence that if he wants to use an agent that will have the same effect as iodoform, I would suggest that he employ europhen, which is a substitute for it, and from which you can get iodine which does the work. The only reason why iodoform is used is because when it comes in contact with the moisture in the tissue, it gives off iodine, and iodine is one of the best disinfectants we have; and if you want to use an iodine compound at all, instead of using iodoform, employ europhen, with which you can get the same results.

With reference to the treatment of incipient or acute alveolar abscesses where we have that severe pain characteristic of this condition, I would not always subject the patient to the annoyance of adjusting the rubber dam; but would open into the pulp chamber and try the best I could to expose the mouths of all canals; then I would seal in hermetically this remedy (cresol and formalin) with cement; after which I would turn my attention to the treatment of the infected pericemental membrane. The thing I would do there, if the patient was suffering severely, would be to inject equal parts of alcohol and water into the nostril on the affected side where the tooth was located. This, in most cases, will stop the pain like magic; it will last from four to six hours, and sometimes longer. Take equal parts of ordinary alcohol and water, and if you have not a watch case atomizer, as suggested by Dr. J. E. Keefe of Chicago, use your syringe, injecting it back into the posterior naris, and after injecting a few drops you can give the syringe or atomizer to the patient; let the patient take it home, and if he has a recurrence of pain in five or six hours, he can use this remedy.

Now, what have I done? I have tried to take care of the septic material in the root canal, and if I do that by sealing in this remedy nature will cause that pain to sudside. I do not expect my remedy to go through the end of the root. Nature can help us in that tissue which is surrounded by live animal cells. In nine cases out of ten by the time the first effect of the remedy has worn away, nature will have taken care of the infection in the apical area, which will cause a subsidence of the pain in that particular region. I would go home and I would sleep, because I know, as well as I can know anything I cannot see, what the result will be.

DISCUSSION OF PAPER BY DR. C. R. LAWRENCE ON "DENTAL RESEARCH WORK."

Dr. W. A. Johnston, Peoria:

The excellent paper to which we have just listened is timely, terse and true.

One of the first questions a child asks is "Why?" and in receiving answers to this repeated query he learns many of the lessons of life.

On growing older he begins to doubt the truth of some of the answers he receives and investigates for himself.

The result is that he burns his fingers on the pretty red spot on the kitchen range and never forgets the lesson he has learned by his original research.

It is the boy who is constantly asking "Why?" who becomes the wise man, for he soon begins to ask questions which no one can answer and if he really wishes to know "Why," he must investigate for himself.

At a clinic some years ago, Dr. Taggart poured a fusible metal upon red gutta percha in order to make a die. Some one in the group who was watching him said, "Dr. So and So told me once that gutta percha was too soft to use in that way." Instantly Dr. Taggart replied in his characteristic way, "Don't believe anything the other fellow tells you. Try it yourself. If you had tried it yourself, you would have been giving this clinic instead of watching me."

Here is where we all fall down. If, instead of taking some other man's word for it, we tried it ourselves, we would all be engaged in original research and our patients would be far better off as a result.

Too many of us go through the world with our eyes shut. We go along in a rut day after day and the path is so well worn that we do not have to look very sharply to get along fairly well.

Here and there, however, is someone with a sharp eye and active brain. In his every day work, he notices that fillings fail at a certain point with startling regularity and he asks "Why?" No one who has gone before him can answer the question so he sets about finding the answer for himself and after finding the reason he is equally anxious to discover a remedy, finding which he tells the world what he has found and those of us who practice extension for prevention, rise up and call him blessed, and applaud whenever Dr. Black's name is mentioned. I differ with the essayist when he says that the investigator, the research man has no reward. The love and esteem the dental profession has for Dr. Black is enough reward for any man even if he should die poor.

Any man in this room would be glad to have nice things said about him, even if he didn't make any money out of it.

There are a few things yet to be learned about dentistry which neither Drs. Black, Miller, Kirk nor anybody else knows and the door is still open for any member of this society to send his name howling down the centuries, if he will do something worth while and teach the rest of us how and why.

We are all seekers after truth, only some seek further and work harder than others and if those of us who are lazy could be stimulated by the more active ones it would be a grand good thing.

In a treatise on archery, I read some years ago, I remember the author advised against shooting at a mark when alone, as he said that the stimulation of another's presence and competition was essential to the best results.

For this same reason is it not probable that if this whole society was engaged in some special line of work as the New York society is, that more good would be accomplished than if the same number of individuals were at work independently?

Suppose, for instance, as a society we proposed investigating any subject Dr. Lawrence mentioned in his paper, would not each member think more, observe more closely and experiment more in that line because he knew that over a thousand other men were thinking upon the same subject and that at the end of the year, they would all compare notes?

It would be an excellent thing if this society should do as the essayist suggests—appropriate funds to carry on some special work, in which we could all take part under the direction of some competent person.

This, however, is getting at the matter in a wholesale manner and it occurs to me that if the society should pay the actual expenses of any one who would take up a special subject for the purpose of writing a paper upon it, for the benefit of the society, there would be more papers read which dealt with original research work.

For instance, in 1895 I undertook to investigate the effect of arsenic on the dental pulp, with the idea of reading a paper on the subject for this society.

I applied to several of my friends to send me the pulps they extracted and made a number of tests for arsenic, making microscopic slides of the crystals obtained, intending to make lantern pictures to use in illustrating the paper. After several months' hard work I ran out of money and was compelled to write to Dr. Peck, of the program committee, that I could not furnish the paper I had promised.

If I had been assured that my actual expenses would be met by the society, I would gladly have continued my work and read a paper that was worth while.

I would not be understood as saying that the state society should pay the expenses of any and every one who is willing to try a few careless experiments which end in failure, but I do wish that it were possible to refund the actual outlay to every one who presents a paper, necessitating original research, that in the judgment of the program committee possesses merit enough to warrant the expense.

In this way the younger men, who have more time than money at their disposal, would be encouraged to continue their college studies and dig deeper into the realm of the unknown, searching for the nuggets of truth which are not apparent to superficial inspection.

I think it is hardly fair for the essayist to quote noted men and estimate the hours they have worked at so much per hour.

In the first place, the work is more often than not, done at night after office hours and the operator would be fired from the union for working overtime, and in the next place, what the investigator learned himself, is pay enough for the time involved.

I only insist that the profession pay the investigator for the knowledge he imparts.

I notice by the papers that Carnegie has put a sum of money in trust for Luther Burbank, so that he may pursue his horticultural studies unhampered by the necessity of earning a living.

If the genial Scotchman would endow a chair of dental research in some college, no matter where, and ask the dentists of the United States to select the man to occupy that professorship, I am sure that the eyes of all would be directed to Illinois and no one would be surprised, when the man was chosen from Cook county.

Dr. F. H. Bowers, Freeport:

About twenty years ago Patrick Manson, an Irish physician, visited India and the southern part of China. Necessity compelled him to go there. After staying in the tropics six months he made a specialty of tropical diseases. He worked there for about ten years. He had acquired a small amount of money and an unlimited amount of information, and then retired to London. He is now the greatest authority and physician in the world on tropical diseases.

How many of you men have thought of tropical dentistry? There is not one of you, I dare say, who thinks that dentistry is different in the tropics from what it is in temperate climates. Yet it is.

Erosions have interested me, and I think there are very few of you who know what erosions are, or what causes erosions. Every man has a different idea. I have seen erosions that extended from molar to molar, not simple indentations or concavities in the teeth, but they were half cut through, as if a three-cornered file had been rasped from one side of the mouth to the other. Does any man know the cause of these erosions? My belief is that it comes from an acid. What is this acid? How are we going to work on it? It would be well for some man to investigate it thoroughly, and that man will be worthy of a reward of merit.

One of the subjects that has interested me particulary is pyorrhea. We have a number of specialists in pyorrhea, one man in particular who has written paper after paper on it. I have heard him lecture on pyorrhea; I have seen him give clinics. His language is such that it is impossible for me to understand it. I would want a dictionary by my side to look up his words, and while looking up a definition of the words he uses, I would lose the gist of his lecture. In his practice he will examine his patient; perhaps give a little advice, and then turn the patient over to an assistant. Perhaps he will not see the patient again; but the assistant does the work. What does that man accomplish? He does not see the result of his work.

I have looked into the question of pyorrhea, and I am free to admit that I do not know what to do in treating these cases. One man will tell me that pyorrhea comes from uric acid, and I endeavor to work out the uric acid. But what can I do? I simply treat the case locally. I cannot go into it systematically, as I do not know enough about it. If it really comes from uric acid, then some man should discover something to remove the uric acid from the system. If that man discovers something that will remove uric acid from the system, giving at the same time local treatment, then that man is worthy of reward of merit.

Another man will say it comes from gout; that gout is caused by lactic acid. Let some of our men discover an agent or agents that will remove lactic acid from the system and thereby cure gout, and also if we cure the gout, we will cure pyorrhea.

What should these rewards of merit be, and how should they be given? Where should they come from? I do not mean to say that every man who has a bright idea, and has worked at it for three or four months, should have his name sent in as one entitled to a reward of merit, a medal, or a Carnegie hero medal. Let him work on. Let the profession have the advantage of his knowledge, and if after three or four years, after adopting his idea, we think it is a good thing, then let some society take it up. Then we should reward him with a gold medal.

Where does all the money go that has been accumulated by dentists? How many dentists, when they depart this life, think of their profession in their wills? True, most dentists die with a very small bank account. There are a few who have money, and who can spare it, and by leaving legacies to the various colleges or societies would help out immensely. By the way, gentlemen, I want to remind you that if any of you do have money and you leave a legacy, please state it in your wills so that there will be no law-suit such as we have had in the case of Dr. Evans, of Paris, who left a part of his funds to the University of Pennsylvania and the other part to the Academy of Natural Science. As the result of Dr. Evans' accumulations, a law-suit sprang up, and it is doubtful whether they will ever receive the allotted amount of money, or if they do receive it, whether they will receive the full amount to which they are entitled.

Dr. George W. Cook, Chicago:

What do we understand by research—the word applied in the ordinary sense means the systematic arrangement of subjects and their correlation with all that pertains to the study of any branch of science. The term is also applied to the investigations of certain problems that are not well understood by those who are practicing a chosen profession. Scientific research along dental lines will not advance any faster than the general sciences. When the problem of immunity is solved in general, we, as a profession of dentistry, can understand and make use of its application in our own calling. But it will always require men of scientific training to gather such facts and place them in their proper relation for our use, and that is just as much of a problem in research work as that of finding out the facts themselves.

Dental institutions and dental associations will never establish research laboratories and place men there to work out dental problems, for it would be quite impossible to satisfy all. I would suggest that when dental associations and dental institutions find that they have money to use outside of their needs, it could best be used for placing some young man who has the inclination for a training in research in a university laboratory. He should stay there for a period of years in educating himself so he would be able to carry on the investigation of certain problems in dentistry. For instance, physics should be better understood by all who are teaching any subject of dentistry. Dental teachers should have a better understanding and also a higher appreciation of all scientific subjects.

The essayist has set forth in a very beautiful way how the profession in general should have a higher appreciation for those who systematically try to elucidate some of the problems of dental practice. A person who does research work should never consider for one minute that he should be worshipped by the profession for his great work, because it is a fact that has been demonstrated throughout the ages of evolutionary progress that but few men have lived to see the true value of their work. Furthermore, it takes a very strong character to retain his place of usefulness if he be too highly appreciated by his colleagues.

The essayist has said that it is only within a brief period of time since the dental profession has come to appreciate the value of research work. A few men have developed in the profession of dentistry who were specially gifted in particular lines of thought, and these men have contributed a vast lot of good material. In the Mississippi valley, and in the State of Illinois, many names can be called that have given dentistry the standing that it now possesses, not only in the Middle West, but throughout the civilized world.

Our essayist has mentioned that the diseases of the peridental membrane is one of the problems that we need a better understanding upon. It would be just as impossible to demonstrate to the dental profession as a whole all the phenomena that takes place in this tissue as it would for the ordinary man to understand all of the astronomical phases that transpire on the moon.

The histological and physiological studies of the oral cavity, and all the tissues that enter into it, are so poorly understood by the general profession that it would be next to impossible for them to understand any of the diseased conditions that appear there. The profession never becomes mentally anxious to read systematically and with understanding about the conditions that are constantly manifesting themselves in health and disease. As long as the profession as a whole sits around and waits for the research individual to dish up and ladle into him in six or seven words all that pertains to a problem that might take a lifetime to solve, it would be useless, in my opinion, for the Illinois State Dental Society to raise money for the solving of these problems.

Dr. F. B. Noyes has shown time and again in microscopical sections of teeth on the screen the relation of the enamel prisms to certain decayed surfaces of the teeth, and how many do you suppose are there in this society who consider these pictures and the anatomical arrangements of these enamel rods when they prepare a cavity for a filling? How many would understand as to whether a bacterium could secrete itself best in a connective tissue cell or epithelium cell in certain diseased conditions? I venture to state that not ten per cent would know under the microscope, except perhaps a few of the recent students, the difference between these two tissue cells. It is not so much a problem of educating the dentist in research work as to make him understand and appreciate the facts of physiology, histology, bacteriology, pathology, and their relations to dental practice. It was Dr. Black's long continued study of histological structures that made it possible for him to propound that great doctrine of extension for prevention. And today we find individuals who fail absolutely to understand why he propounded such a sweeping statement.

What has scientific research done for the therapeutic application of certain drugs? The dentist's medicine cabinet is today loaded down with certain remedies that have been handed to him from persons whose scientific knowledge of compounding drugs is very limited and who have never had a particle of training in any department of science. What use is it for MaWhinney, Buckley, or any other therapist to instigate research and follow it out when the trade salesman comes along and hands you a bottle of dope and tells you that this will do all that MaWhinney and Buckley have said could be done in the treatment of certain diseased conditions of the oral cavity?

I appreciate the motive that instigated the writing of this paper. Here is a gentleman who is asking us in the name of science and the good of the profession to follow up certain lines of research that pertain to our own calling. I hope that what he has said will stimulate some to read the splendid line of papers that have been published upon scientific subjects and various other problems that pertain to our specialty. It should be the duty of every practitioner who wishes to be called a professional gentleman to systematically read and study well those papers that are published from the hands of scientific thinking men who are toiling to bring forth and systematize scientific research. Papers by Black, Noyes, Hopewell Smith, and many other distinguished writers upon scientific problems are scarcely read and studied so as to obtain a definite and clear understanding of what the authors mean. The dental profession that is here at this meeting as a whole are here, not for the purpose of being educated in a scientific way, but are here to obtain a few practical hints that they can take tomorrow morning and put into practice. Yes, we need more research, There are some problems that will require many years to elucidate, and many scientific articles will be written yet before all of these problems will be placed in the calendar of science as settled. I knew a capable scientific man who worked one whole year on a problem to find, after a large expenditure of money, that he had nothing to give to the world on the problem on which he was working. Such a man in the dental profession would have been stamped a failure as a scientist. Research is interesting and is also profitable to those who may study and learn what the research man is doing, but with all the splendid study and thoughtful consideration that has been given from purely a scientific standpoint, eighty-seven per cent of the dental profession are using for the treatment of teeth empirical remedies, without any regard as to what the research work man has done or said upon that subject.

I have taken the opposite side of this subject, not because I am antagonistic to research work, but because I believe in my soul today that there has been published in the last five years some of the best scientific thought that the scientists in the dental profession can correlate and bring into close adaptation to the work in hand.

*Dr. G. V. Black, Chicago:

I did not expect to discuss this paper, nor did I expect to be called upon in this way, but I will say a few words. The realization that all scientific work moves abreast perhaps does not come to you all. Tomes had to wait in his work in the development of the histology of the teeth for the maker of lenses to improve them so that he could see farther. Take what you will in the development of science, in the field of human thought, and we will find an application for most of it in our particular work. The same apparatus in its essentials that is used in measuring the distance of the sun, for instance, is also used in determining the crystals of certain substances of the saliva that seems to have to do with caries of the teeth. While that is the case, we can not say that there is any development of scientific thought or of fact that may not in a few days or a few years become the basis of a discovery in our specialty. Our work is just as broad as that. One of the things which we lack most, notwithstanding our great manipulative ability, and wonderful knowledge of mechanics, is a broad appreciation of physics. We somehow do not put one idea over against another in their proper relation to each other in the physical world, and if some one would come along with a

---

*Was announced by the president as the first gold medalist.

genius for that, it would be a good thing for us. Not very many such men grow up in the world.

As to the effort that has been made of trying to encourage this work, I have generally had a feeling it was useless; yet I have not wished to say so. The men who develop these things generally do it anyhow, whether they are helped or not; but it does seem to me that if we could have a wise discrimination in the placing of helps in these matters it would be better for us and the people we serve. There is really not so much difficulty in the development of thought as there is in the assimilation of correct thought and of correct methods by the profession. It is exceedingly slow; but it is growing all the time, and it is growing in the right direction as a whole. There is a wonderful difference in the practice of dentistry today and forty or fifty years ago. There is a wonderful difference in the countenances of the people we serve, due to what this profession has done for them, and I have spoken of that recently. Go where we will today we rarely see the face or mouth in a badly mutilated condition. We have not much reason to complain of the development that is going along in our line. But I shall hail with gratitude anything that can be done to help this matter.

As to the scientific work of the New York State Dental Association, it is going on regularly. I have been regularly in correspondence with the committee, and the work on dental caries is developing some wonderful things. It is not done by one man alone; it is being done by a considerable number of men, and the uniformity of the results that are being obtained by these different men this year will, I think, be very interesting reading when the report comes out. I have wished I could engage regularly in this work myself, but I can not do so. I have too many other things to do, and have told them so. Not many men work well in these fields unless they have had preparatory training or work. There are several men engaged in this in New York State who either themselves have had this preparatory work, or have the direction of men who are well prepared. All of these things come in, however, to assist, to stimulate, and to correct the judgment of men. Please remember that there is nothing proven by the work of one man, no matter how perfectly he may do that work. Miller's work on the caries of dentine was the most perfect piece of work in the line of investigation I have ever known, and yet it was not proven until many men had gone over the work and had found it correct. Just remember that. The working out of a problem by one man does not prove that problem. He may be wrong. It requires the consensus of opinion of men who are in that field to establish any such fact.

Dr. Fred B. Noyes, Chicago:

I came in unfortunately during the reading of the latter part of the paper, so that I do not feel that I am in a position to discuss it at length. Of course, I am very much interested in some lines of research work. The problem of a society assisting in that work is not as simple a thing as it might be. There is some truth in what was said by the previous speaker, that if men are not enough interested in these problems to work them out without assistance, they will not do it with assistance. There is nothing in the world that requires enthusiasm so much as original investigation. A man must be determined to find out what is a fact for the fact's sake. He must be willing to forget that he ought to eat, that he ought to sleep, and that he ought to practice dentistry sometimes, and if he does not, his research work never goes very far below the surface. You need only to read the literature of any profession carefully to find that some articles which represent research work were undertaken by men who knew what they were going to find before they made the first experiment, and there has been nothing which has held back professional advancement more than that kind of research. Everyone who undertakes a line of experimental work has ideas as to what he thinks he is going to find; but if he is an investigator, he must be free from prejudice; he must be willing to weigh everything, and be able to see the results he gets even if they are not the ones he expects.

I have often thought that there are, at least, two very distinct types of men, both of which have been of the greatest value to the dental and medical professions, but they are diametrically opposite in their tendencies. I could name men, for instance, in the dental profession who, if you were to talk to them on a single subject you were interested in, would begin and tell you that on such and such a date so-and-so published this article, which presented these facts; and on such and such a date in France so-and-so published this article, which presented these other facts, and they would give you the literature of the subject just as if it were A, B, C in their minds. But if such men were to undertake a piece of experimental work, they would consider as important the exception and overlook the rule and generally misjudge the results of their work.

Another type is represented by the man who, in a line of experimental work, catches something that the other man has missed entirely. It was there in the experiments, but the other did not see it, and that little thing he did not see was the key, was really the important thing in the whole experiment. In other words, the one man by the development of the subject knew all there was previously known in connection with the history and study of that subject; while the second man had a keen insight as to the relative value of observed facts. There is the spirit of the investigator. I have sometimes felt that the American nation has taken almost a front rank in original research work in the world, partly because they are the nearest to the experienced pioneer. What was the training of the pioneer? It was to interpret slight things. It was to learn how many men had passed a certain road by the appearance of the track. It was to notice in what direction the winds prevailed in that locality by the slight inclinations of trees and of blades of grass. It was to interpret from slight indications, and to draw correct logical conclusions from observed facts. That is the fundamental training of the investigator, and the American people have that pioneer training closer to them than any other nation of people in the world, and I believe that is one reason why the American people have developed more original investigators in scientific lines in the last century than almost any other. The theoretical, the experimental, the so-called scientific subjects of our profession, enable us to understand the results of original workers. We need to have enough enthusiasm for our profession to study chemistry sufficiently to appreciate the facts which were presented to us last night by Dr. Buckley. We need to have enough knowledge of physics to appreciate the experimental work of one who is working on the force of mallet blows, and if we have not that knowledge when we read an article, we ought to have enthusiasm enough for our profession to study up. There are many pieces of work appearing in the dental journals which we are not capable of reading intelligently without some textbook work, and no man should be ashamed to admit it. When we come across one of these articles we ought to have enthusiasm enough for our profession to get down and dig at nights into our textbooks, and then get back to the article and read it. This will make it worth while for us to spend time, energy and enthusiasm in research work, so that it can be presented to the society and in turn to the profession, and if men care enough for it they should spend some time in trying to understand it. When a man presents the results of his original research work, covering a period of five or ten years, and finds after presenting it to the profession that it is absolutely forgotten, it is not encouraging to the research worker.

Dr. J. E. Hinkins, Chicago:

The question of research work is of great importance to the profession, and from my own feeble efforts in this direction I know that it requires lots of energy and enthusiasm for a man to try to do research work. The difficulty of taking up this line of work by a man who has not had the advantages of a scientific education or collegiate training is far greater than the average dentist has any idea of. It requires a scientific mind and training to do research work. I will say to you frankly, that the hardest work I have had to do has been to spend time in reading textbooks and the works of other men, so as to get an intelligent and scientific interpretation of what they were trying to give to the profession.

I believe, too, that it is absolutely essential for a scientific man to be in an atmosphere of scientific work. The research worker must be liberal and honest; he must be capable of weighing both sides of a question, and unless he is trained in a special line in which he is going to devote his attention, he can not do good work. He must be associated with some university and come in contact with the men who are doing such work.

The technique of biological chemistry, of physiological chemistry, of histology, or microscopy is just as important as the technique in any special line of dental work. A man must be educated for that kind of work; if he is not, his work will not stand.

While I was listening to Dr. Buckley's paper last night with a great deal of interest, the thought occurred to me as to how many men in the profession had any conception or idea of the number of hours he had given to working out the formula he gave, and the chemical work which he had done. No one realizes more than Dr. Black, Dr. Buckley, or those who are trying to do scientific work, the importance of collecting the gases generated by pulp decomposition. The dentist cannot go to work and formulate a technique to accumulate these gases, so that he can test them chemically. He has to study to do that work, and when he gets the idea or plan he must have the technique to know how to manipulate the agents he works with. This is what makes Dr. Buckley's paper so valuable to us.

Dr. Lawrence (closing the discussion):

I am very sorry that the men who have discussed my paper got somewhat off of the subject I had hoped to have discussed. They all looked at it from a scientific standpoint, which, of course, I am not capable of doing. The consensus of opinion of those men who have discussed the paper seems to be that we are going along about as fast as we can in scientific work. If that is the case, I suppose we will have to be satisfied. But they all complain, I notice, that we cannot get the rank and file of the profession interested. Why is it? Simply because we are not associated with these scientific workers in their line of work. It seems to me, if we would adopt the plan of the New York society, of which Dr. Black spoke, we would naturally become more interested in a certain line of work. Those of you who saw the charts which were passed around will have a better idea of this work than those who did not see them. I think it would be well to form a class for scientific research work, with a Dr. Cook or Dr. Black at the head of it, and then more dentists would naturally become interested in this line of work. Take the paper of Dr. Buckley last night. If we had taken that subject up as a society two or three years ago, many of us undoubtedly, probably all of us, would have been much more interested and better able to understand his paper.

The New York State Society, some two or three years ago, asked the Carnegie Institute in Washington for some assistance in doing scientific work, and it was unable to secure any aid at that time, but it thought that if we become better organized and make application we would get help. We must do something for ourselves before anybody else will help us. We had a little experience in that line some three or four years ago when we went to Springfield and asked for a new dental law. Apparently then we were unsuccessful, but when we became better organized and approached the legislators again, you know what we got, and I think if we were to become better organized along this line we would get this outside financial aid, and while it would not hurt a Rockefeller any, it might do us and humanity a great deal of good.

CHICAGO ODONTOGRAPHIC SOCIETY.

A regular meeting of the Chicago Odontographic Society was held at the Palmer House on Tuesday evening, April 16, 1907, at 8 p. m.

The president, Dr. Hart J. Goslee, occupied the chair.

Dr. W. H. Taggart, the speaker of the evening, was introduced by the president, and spoke concerning his new method of making gold inlays.

Dr. C. N. Johnson:

In view of the lateness of the hour, and more particularly in view of the very excellent presentation that we have had here this evening of this principle in inlay work it is hardly necessary to occupy any of your time in discussing it; and still, Mr. President, it gives me the very greatest pleasure to appear on this occasion and pay my humble tribute to the genius of the man who has brought this before us.

Cast metal work is not new. Your president, in reporting on this work, made the statement that this and that man had done cast metal work before, and in fact I have myself seen beautiful crowns and bridges cast some years ago by Dr. Pitts of this city, and yet what Dr. Taggart has accomplished is something infinitely finer, the technique and detail of which I do not believe have ever been approached in the history of the profession.

It was my pleasure today, in company with several gentlemen, to witness this process from the beginning to the end, and I cannot express to you this evening my admiration of the wondrous technique and the perfect results that we saw demonstrated in his laboratory.

I do not wish to attempt to add anything to this subject, because I cannot do it. It is all new to me, but I believe it has possibilities for us, not alone in inlay-work, but in the reproduction of any models in gold which we can make in wax. It is unnecessary to pay tribute to Dr. Taggart. Dr. Taggart, this audience in your own native city is a greater tribute than anything I can speak.

Dr. J. E. Nyman:

Mr. President, I feel it a very great honor, and a very great pleasure to be here upon this occasion and take part in the discussion. I have a very great sense of pleasure despite the fact that all the old and seemingly very efficient methods of gold inlay work have become obsolete methods. The Thompson inlay, the Wassall inlay, the Hare inlay, the Hinman inlay and the Nyman inlay have become obsolete, and we shall not hear of them any more; and yet my sense of pleasure comes from the realization that because of what we have been given through the genius of this man I shall in the future make more perfect inlays than ever in the past.

The year 1907 marks an epoch in our profession, both in the operative and prosthetic departments. That it is a notable epoch we recognize, but just how notable we cannot at present estimate, for the full scope of this wonderful process and device has not as yet been determined. You have observed its design, construction, its operation and the results. Considered as a machine, it is compact and simple, in that it has no unessential parts, automatic and uniform in operation and accurate in results;—considered as factor in our life work, we at once recognize the value of this invention of machine and method.

We are grateful for both of these things, and in addition we should rejoice that this invention does not eliminate "the personal equation." If it did, if the dentist were to become a mere accessory to a machine, then we should come to look upon it with regret and to regard its inventor without gratitude.

But in addition to the splendid perfection of the process and the device, is the splendid fact that it remains nevertheless an accessory to individual skill.

Let no one think that this device will permit him to be careless, thoughtless and crude in his operating. If he does, he will surely come to grievous disappointment. One may say, "Why, it's no trick to fill a cavity with wax, and if you can do that and you have one of these machines, it's no trick to make a gold inlay," and yet, that one will make as many imperfect inlays with this method and device as he ever did with the old methods and devices, until he learns this lesson—that to begin with, the cavity must be as carefully and correctly prepared as of old, and then this newer and more important lesson, that it requires all the skill and care that you possess to construct a perfect wax inlay for that cavity, and instead of it's being "no trick," you'll find it's very much of a trick; and one will learn that to produce the perfect results that this method and apparatus are capable of, he must exercise the utmost nicety and skill of manipulation from first to last.

Instead of discounting individual skill, this invention puts a premium on it, for if one exercises every care and all his skill he will obtain more perfect results. This may well be called the ideal method, for the process embodies all the essentials that are requisite to any process that may be designated by that term, such as accuracy and permanency of result, economy of time, comfort of patient and operator, simplicity and ease of manipulation.

We have a unique opportunity tonight. We are privileged to greet one who has returned successful from the quest of the absolute, that is to say, to the quest of the impossible. This man has been seeking for months and even years to accomplish that which we have been convinced was impossible, and it is no exaggeration of thought or of word to say that finally, in a way that makes us feel that now and again the days of miracles come back once more to us, through the force of his imagination, his ingenuity, his perseverance, his knowledge and skill in mechanics, he has done more than make the impossible the possible, he has made it the probable; he has done even more than that, he has made it a certainty.

I doubt not that were the intimate story of this achievement to be written from its inception to its completion, it would read like a romance wherein would be shown all the phases of human emotion, dreams, schemes, hopes, endeavors, failures, promises, disappointments, discouragements, perplexity, inspiration, perseverance, and again indomitable perseverance, and at last the joy of achievement, the sense of success, and the delight of dreams fulfilled, the enthusiastic praise of his fellows.

I wonder how many of you who just now witnessed this marvelous demonstration, done with such deftness, accuracy and apparent ease, and in the lapse of but a few minutes of time, have reflected that back of these few minutes of demonstration lay hours and even months of labor and sacrifice, of outlay of energy—mental and physical—of money, with large loss of practice. Consider this, and you will have some sense of what we owe him. Then consider what this will be to you in your own daily work, increasing the amount you may accomplish, removing the difficulties that have worried and perplexed you, the saving to you of mental and physical force, the economizing of time, and above all, improving and perfecting each inlay operation that you perform; think farther of what it means to the patient in the economy of time, in lessening discomfort, and the more perfect repair of the teeth, and then you should have a full appreciation of the debt that both the profession and the public owe this man. It took a dreamer and a doer; an artist and an artisan to accomplish what has been demonstrated here tonight, and but few men combine these attributes. We should be proud of him, we should be eager to show our pride, and we should gladly render him the reward both sentimental and material, that all will admit is justly his due.

It is given to but few men to become the notable ones of their generation, and yet Dr. William H. Taggart has become so beyond the shadow of a doubt, and through the years of the future his genius will be remembered and referred to as a benefaction to both practitioner and people, and should the records of our profession be blotted out, his name would be perpetuated among those handed down from one generation to another by tradition.

Dr. F. E. Roach:

I think that the best thing that I could do under these circumstances would be to say "Amen" to the remarks of the preceding speaker. His remarks have so beautifully expressed my sentiment that it seems idle for me to occupy your time, and tell you how I feel in regard to this matter. However, I do wish to express my appreciation of this very great honor, as I consider it a privilege and an honor to be permitted to pay my little humble word of tribute to our beloved confrere, for surely we must all admit that he has given us a method of not only filling teeth, but of restoring lost teeth, and of doing many other difficult operations in the mouth that it has been almost impossible to do before. We must all recognize the wonderful development that he has brought out in this method of work.

I have been tempted to make a statement for some time the truth of which I have felt. I have thought in my own mind for a number of years that the filling of these large restorations with gold must eventually pass out, as one of the lost arts. I have hoped for some time to see a method that would make this work possible, and tonight we have that method offered to us by Dr. Taggart. I still believe that there is a great field of usefulness for the gold filling, but my position is, and I believe I am safe in saying, sounds the death knell of the larger gold restorations. I would not have that statement misunderstood, but I believe that the time has come when some method must be adopted by which this excessive strain upon both the patient and the operator must be eliminated.

There are so many uses to which Dr. Taggart's can be put to that there seems hardly any limitation to it, and to my mind those limitations are more especially confined to the simpler cavities, and the cavities in which we may reasonably insert gold fillings, and secure a very satisfactory inlay in possibly a shorter time. To my mind this method has its best use in the large restorations, with the more complicated cavities. In case of bridge work, where we want to make an abutment, this method is superior to anything we have had, and I feel that we are to be congratulated in having it presented to us.

Dr. E. J. Perry:

Mr. President, I gladly add my praise to what has already been said concerning Dr. Taggart. I have known him ever since he has been a dentist, and all that time I have been very proud to class him among my friends.

I do not know that I can say anything about the inlay. I have never made any of them. I have seen those that have been placed upon exhibition, and I have seen Dr. Taggart make some in his laboratory. He has also made several for me, which I have applied in my practice, and they are all absolutely perfect. Every detail has been carefully explained to you by Dr. Taggart himself, and the wide range of adaptability of this work to your practice will only appear to you as you adopt the method. The possibilities of this method will develop as you use it. I fancy you will be making all of your gold crowns by this method, many of your Carmichael attachments, and all of your complicated gold restorations.

There has been much pulling at the stars tonight. There has been a great deal of eloquence floating around, and if I had any idea that any of the gentlemen who were to precede me this evening had written out an essay I would have attempted to write something, and read it to you, but what Dr. Nyman has stated in his paper is so much to the point that it is absolutely unnecessary for me to attempt to add anything to it. There are so many things to be said about the inlay proposition that if we were to open up the discussion it would never end.

Dr. C. Kabell:

I would like to ask Dr. Taggart what the limit of pressure would be to force the gold into the cavity, without allowing for any shrinkage? There must be a certain pressure which overcomes the shrinkage of the gold.

Dr. Taggart:

I use twenty-five pounds. I think a pressure of 15 or 25 or 50 pounds would be sufficient to prevent the molecules of metal from assuming any position they wanted. Plaster of paris is the binding material of this investment compound, and that has to be loaded up with infusible materials to such an extent that the investment is not as strong as the plaster cast would be. Consequently the internal pressure cannot go beyond the strength of the cast to sustain it. By beginning at 50 pounds, and dropping to 40, and even 30, I would get a bursted flask.

In the more simple cavities most any pressure that would push it against the surface would be sufficient, but in a complicated cavity you would require more than a small pressure. I don't think that a pound or two pounds would be sufficient, unless there is a very simple, flat surface.

Dr. W. D. Murto:

I do not suppose that I appreciate the method that Dr. Taggart has presented here tonight any more than any other member who is here, but it does seem to me that with the great amount of work that has been done, and the great favor Dr. Taggart has given us, that we might in some material way present to him something which would be an everlasting remembrance of our appreciation for this favor, and, if it is not out of order, Mr. President, I move you that a committee be appointed to present something to Dr. Taggart, which they might select, which would be an expression of gratitude and appreciation from this society.

The motion was duly seconded.

Dr. John V. Conzett, Dubuque, Iowa:

I would surely be ungrateful if I did not rise to express the thanks of Dr. Heise and myself for the invitation presented to us to be here, and to thank Dr. Taggart for the demonstration he has given us. The fact of the matter is that Dr. Taggart's work has always been an inspiration to me. Twenty years ago, when I started in the practice of dentistry, a pupil of Dr. Taggart's made such a beautiful demonstration of a gold filling that it became an inspiration to me, and I decided that I would attempt to emulate his example. After many years of stress and trial I have attained some degree of proficiency, and tonight I thank Dr. Taggart again for another demonstration, and I have taken a vow to myself tonight that I shall attempt to emulate his example in inlay work. In the past I have not made many inlays, as I have not had much faith in the inlay proposition, but I must confess that the demonstration tonight has made me an advocate of Dr. Taggart's method. I want to thank him for the wonderful demonstration he has given us.

Dr. John Q. Byram, Indianapolis:

I assure you, Mr. President, that it is a great pleasure for me to be here this evening. I have attended many dental meetings, but at no time have I ever attended a dental meeting where anything has been presented which showed the work of a master artist as that which has been presented to us this evening.

Dr. Conzett said that Dr. Taggart had been an inspiration to him, and I want to say that Dr. Taggart has been an inspiration to many of us. Those of us, who have learned of his untiring efforts, have learned to appreciate him, and what he has been doing. Some are fortunate enough to be geniuses, and others are fortunate enough to be artists, but in very few do we find both qualifications, but we have in our midst a gentleman who does possess both of these qualifications. He is not only a genius and an artist, but he has a creative mind and is a hard worker. This should be a lesson for us, for while we may not be geniuses or artists, we can work hard. Most of us are too lazy, and do not want to take hold of a thing until it is perfected. Dr. Taggart has given us a great thing, but it is up to us to do our part. We cannot expect to take hold of this, and begin where Dr. Taggart left off, but we must begin at the bottom. Dr. Taggart very aptly said that unless you have a perfect wax inlay it would be impossible to have a perfect inlay. To those of us who are not skillful in carving, it behooves us to master the technique of carving before we begin constructing inlays by this method.

In closing, I wish again to pay my tribute to Dr. Taggart. He has been an inspiration to me. I have had the honor to know him for five years, and I want to say that no man in the dental profession has done me more good than Dr. Taggart.

Dr. Hart J. Goslee:

I cannot lose this opportunity to say another word for our confrere and his accomplishments. He deserves all of the expressions that have been uttered, and I will tell you why he deserves them—not only because of the results that he has tonight shown us as being possible, but more particularly because of the hard work that was required to make these results possible. Perhaps I am more familiar with the amount of work that Dr. Taggart has done during the past year than anyone else here tonight. He received a royal reception in New York when he presented this before the Odontological

Society there, and I thought at that time that he was entirely through, and had completed what he was seeking for, but, gentlemen, he has not stopped a second since he got home, and I believe he has worked harder during the past two or three months than at any time before that. I only mention this to show you the amount of work which it has been necessary for him to do.

I could laud Taggart all night, but I will not do so because so many others have spoken, and, as I have stated, he deserves everything that has been said.

As to the practicability of this method, it makes those extensive, complicated and difficult cases as simple as the easiest class we have, and therefore it is exceedingly valuable. I do not believe that it will entirely revolutionize the former methods of filling all cavities, but this method enables us to secure as perfect a fit and more perfect artistic results in difficult cases than we can get in the more simple cases by the old methods. To a very large extent it will and must necessarily revolutionize our former methods, and, in closing, I will say that we owe Dr. Taggart a very great debt of gratitude for what he has done, not only in behalf of the dental profession, but for humanity in general.

Dr. Truman W. Brophy:

I must confess that I know but very little about Dr. Taggart's method, as I haven't had an opportunity to see the doctor exhibit his process from beginning to end. I hope I will have an invitation one of these days to go over to his office and see just exactly how he does it. I suppose I am like the rest of the gentlemen present, who feel confident that it is a good thing because it is Taggart's; and, furthermore, I realize that it is a most excellent process because I have had an opportunity this evening to see some specimens of his work. It seems to me like a common sense method. You all know that you can mold a bullet, and make it fit a gun; so, if you have the right form of a cavity, you can certainly by his process make an inlay that will fit the cavity. It seems to me that is the whole thing in a nutshell.

I might say, Mr. President, that I had the privilege ten days ago of listening to a paper by Dr. Tracy of New York at the Academy of Dental Societies, in Boston, and Dr. Tracy had some specimens there which gave to the members present something of an idea of the possibilities of inlay work by Dr. Taggart's method. There is a demand for a plan by which teeth can be filled with less nervous exhaustion on the part of both the dentist and the patient. I believe that the people generally are to be benefited and congratulated on the achievements of Dr. Taggart in bringing to us a process by which we may preserve teeth—preserved with less discomfort and greater certainty than by the gold-foil filling process.

There is another feature in this method that appeals to me. We are going to get rid of the use of baser material. I have never been a believer in the use of amalgam. I saw a few days ago a filling that was put in forty-six years ago by Dr. Allport, and it was as good when I saw it as it was when he put it in. That filling was put in by a man who was an expert in manipulating gold, and a man who was capable of introducing a gold filling in less time than any man I ever saw, and yet had that patient been in the hands of Dr. Taggart today he would have filled his teeth with less discomfort.

We have passed into a new era in operative dentistry. As I remarked this evening, an American, Dr. William D. Miller, the great dental scientist, though a resident of Berlin, brought to the world one of the greatest discoveries in that science—the cause of dental caries. Now another William, our William H. Taggart, has distinguished himself in the dental profession by devising a new and humane plan by which we may arrest dental caries and restore the teeth to normal form. Every American will be glad that he belongs to a country which develops men in the arts and sciences that rank among the foremost men of their day.

Dr. Fernandez:

Mr. President, Ladies and Gentlemen—The praise extended Dr. Taggart this evening has been so complete that it is difficult for me to find anything more to say.

When we consider that in this method we can use not only any carat of gold, but any other metal as well, and that the same principle can be adapted to so many departments of mechanical work, not only in dentistry, but in other branches of the mechanical science, I think it is certainly a revelation.

Dr. Taggart has certainly placed in the literature of dental science a grand emblem and every one of our profession will certainly admit that it is a generous and useful gift we have received tonight.

In my experience, this is not the first time that Dr. Taggart has shown generosity and unselfishness, and I for one hope that Dr. Taggart's acme, as well as his name, may remain indelible forever in our dental records.

Dr. Taggart (closing the discussion):

All I will say in conclusion will be to thank you for the very kind words that you have expressed this evening. Any further talk would be useless. I think the process has made a deep impression upon you, and I hope you will go home and reap all the reward and benefit the process will give you.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT ROME, MARCH 29, 30, 1907.

DISCUSSION OF DR. LAW'S PAPER ON "CHANGES INCIDENT TO CORRECTING, DISTAL OCCLUSIONS OF THE LOWER ARCH."

Dr. George Northcroft:

Felt indebted to Dr. Law for his very well thought out paper and the careful observations he had made. It was a paper that had probably taken the author six months or a year to write, and to criticise it in six minutes was an impossibility, but there were one or two points that might be referred to. The author stated as a fact that the first permanent molar occupied a position forward of the position previously occupied by the second temporary molar, and he should like to know what method he adopted in proving that point. He joined issue with him on one statement. He seemed to imply that it was universally true that the narrowness of the upper arch had nothing to do with the distal occlusion of the lower jaw, but while that might not be true of a great many cases the author had seen, from the number of mouths he himself had examined he should feel rather inclined to think it was a very marked factor in the case of distal occlusion. The author also stated that in distal occlusion the lower jaw contained the same amounr of cancellous tissue whether it was distal or normal. Considering the jaw with the ramus at right angles to the body of the jaw, as in distal occlusion, if that angle was made more obtuse, as it was in the author's treatment, there must necessarily be in the bending of the jaw more cancellous tissue in the jaw itself; and to say that there was the same amount of bone when the body of the jaw was at right angles to the ramus than when it was at an obtuse angle was saying what was a mathematical impossibility. It might be illustrated by a mitred picture frame and the opening out of that frame. He also desired to know whether the author, in his research work, had ever adopted a method which he was now employing, and which he thought was probably more valuable than the taking of photographs before and after operation, namely, the taking of shadowgraphs. One desirable point was that the shadowgraph of a patient obliterated the features, as one might get a very valuable case where it was not desirable to exhibit the face of a patient before a society. But above all things, it was possible to put the patient and the light at mathematically known distances and thus obtain a shadow of exactly the same size before and after treatment, a thing which could very rarely be obtained in photography. It was also possible to superimpose the shadows one on the other and measure exactly the amount of change that had taken place, a thing that could not be done with photography. It was a little method he had adopted with a good deal of success.

DR. YOUNGER

Complimented Dr. Law upon his excellent paper and congratulated him on the successful issue of his work.

DR. LAW,

In reply, was sorry the subject had not led to more discussion, because it was such a very broad subject that many of the members must hold varying views. It did not, of course, appeal to all general practitioners, who as a rule seemed to dislike the subject, probably owing to the very small time they had to devote to it. In his experience with regard to the narrowing of the upper arch and the distal occlusion of the lower it was impossible for the upper arch to be narrower unless the tongue was removed from the roof of the mouth and the sides of the jaws, since the tongue was the only thing that kept the shape and position of the arch. If the tongue was removed the mouth was open, and if the mouth was open the jaws were depressed and the muscles of the lips and cheeks were put out of place. In young people it was more clearly seen than in older people, because the cheeks were so much thicker in proportion. In young people the lower jaw changed almost at the same time and to the same degree as the upper one. The lower jaw did not narrow to any perceptible degree because of the support of the tongue, but there was no support on the upper, and that was the reason of the narrowing of the upper arch. The anterior portion narrowed more than the posterior portion simply on account of the shape and size of the maxilla. He did not think, therefore, that the narrowing of the upper had the slightest effect on the lower arch. With regard to the amount of bone substance in the mandible and the change of the angle of the arch, he could not see how Dr. Northcroft figured it out, except that the older the patient the more substance, on account of the development that would naturally go on. Changing the shape of the bone was like changing the shape of so much rubber: the shape of the rubber could be changed without adding rubber, and the shape of bone could be changed without adding bone. A simple opening did not need any new bone to fill in the space. He did not think that shadowgraphs were as good as photographs, because a great deal depended on facial expression, and the shadowgraph gave nothing but outline. He found it possible to make the photographs as absolutely near the same size as was necessary by means of callipers. The measurements from the patient to the camera were perfectly easy by taking all the patients at the same distance. Variation in size and position, however, was not a serious objection, because in doing the work oneself the necessary allowances could be made for a comparison. He did not think the shadowgraph was as accurate as an untouched photographic plate, and the value of clear-cut photographs could not be overestimated. The objection on the part of the patient was of no importance having regard to the fact that names were not mentioned.

Dr. O. Solbrig

Asked Dr. Law to explain what means he employed to change the form of the lower jaw.

Dr. Law

Said in changing the angle he used the Angle appliance with the inter-maxilla bands for the anchorage. The patient was told to bite comfortably. The moment one got into the habit of bringing the condyles slightly forward the effect was lost; the condyles had to be kept distal as was done normally. If the condyles were brought forward no effect was obtained, but if they were kept distal all the time then as the arch came forward the mandible reformed, leaving the condyles in their proper place. Oftentimes the patient got into the habit of bringing the teeth forward; and unless they readily went back to the natural position in the fossa he took the ligatures off until the habit of biting forward was overcome, and then began again with very light ligatures. With regard to one question asked by Dr. Northcroft that he had omitted to answer, he had examined hundreds of skulls in the Berlin museums and had compared the position of the molars at the age of twenty with the positions the deciduous molars occupied and had found the distal line of the second deciduous molar was the same as the distal line of the first permanent molar, which meant that the upper molar, being larger, occupied a position further forward than the deciduous molar.

Dr. Northcroft

Asked what that relative position was and whether it was obtained by taking the position in relation to the zygomatic arch.

Dr. Law

Said it was in relation to the maxillary process. In all cases he found that the maxillary process came down from the zygoma and always lay right over the roots of the permanent molar and right over the roots of the second molar, but the line distally was the same on both teeth.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States, its possessions and Cuba and Mexico. Canada, $1.40. All other countries $1.75 a year.

EDITORIAL.

COURTESY IN CORRESPONDENCE.

If an acquaintance meets you on the street and speaks to you, you make an answer of some sort, even if what the acquaintance says is of no particular interest to you. You do this through courtesy, and it is a perfectly proper courtesy. It would be an affront if you turned your back on him and took no notice of what he said. But frequently you will receive a letter—the "you" in this case refers only to those who are guilty—which does not happen to interest you, and instead of acknowledging it you throw it in the waste basket, as if under no obligation to notice it. Correspondence is sometimes burdensome, but it is an apparently necessary burden associated with our modern civilization, and there is an ethical phase to it which some people should begin to recognize.

It is needless to say that no reference is here made to circular letters, or advertising matter, or promoters' plots which flood our desks through the toleration of Uncle Sam. What is meant is the personal letter written for a specific purpose and about a matter which may be of moment to the writer whether it directly interests the recipient or not. To ignore a letter like this is almost equal to a slap in the face.

The members of our profession probably do not have a monopoly of this sort of discourtesy, but they can claim a pretty fair representation in the ranks of delinquents. For instance, how frequently it is the case that the chairman of a program or clinic committee will write to twelve or fifteen men with the request for a paper or clinic for some meeting and get only one or two acknowledgments, possibly not that. Meanwhile the chairman waits and waits, not daring to write to other men lest a tardy acceptance may by chance come in from those first approached. When you get such a letter sit down and answer it within a day or two at most. Accept the invitation to aid in the meeting if you can, but if not, then let the chairman know at once and give your reason. A prompt declination is almost more satisfactory than an eleventh-hour acceptance.

When an editor approaches you for an article for his journal write him in regard to the matter—it may cure him of any desire for the article, which at once relieves you. But write him, in any event. He then knows what he can depend upon, and he will rise up and call you blessed. To be called blessed by anybody, even an editor, is worth while—in fact, it is always worth while in this world to do the right and courteous thing, and one of the right and courteous things is to answer your correspondence.

THE EDITOR'S DESK.

JUST ANOTHER ONE.

[Continued from October Dental Review.]

That afternoon the entire party went fishing, including Mrs. Cunningham, and before the second boat load had been landed from the dinghy Mrs. Cunningham had tossed a fine black bass on the bank. From that time on the air was filled with fish. Such sport I never before witnessed and never expect to again. There was little limit on our catch that day, as we were to break camp the next morning and go to Parry Sound, and from there to Blackwater, where fish were never known to spoil. The Veteran for once in his life caught all the fish he wanted, and finally found a log on the shore, lighted his pipe, and sat down, the picture of contentment. At one time we had three bass going on the lines at once, and each landed his catch. If that isn't excitement, I never saw any. We were all yelling and badgering each other like a lot of boys let out from school. Lorne was too full of life and mischief to remain in one spot much of the time, and so to anchor him the Doctor asked him to take his place in the dinghy where I was fishing. Lorne had up till now paid the penalty of the impatient by indifferent luck, and the first few minutes in the boat were deadly dull to him. We were anchored in the channel where the wind struck us, and as Lorne never wears a hat or coat at the Island, and has his shirt sleeves rolled higher than the most fashionable ladies of the day, the wind naturally bit him.

"Gee!" said he, "this is frigid. Say, Dad, it was a measly trick in you getting me out into this boat, where I can't run around, and where the fishing isn't— Hully gee, look at that!" he suddenly exclaimed as he jumped to his feet in the boat and began to struggle with a three-pounder. It was a pretty sight, and we all enjoyed it immensely.

"How about being cold now, Lorne?" I asked, as I sat in the stern of the boat watching him. The fish was ripping the line back and forth through the water and Lorne's eyes were dancing. "Feel cold at all, Lorne? Say, just wait a moment and I'll get you an overcoat. Well—if you wern't in such an awful hurry with that fish we might build a fire for you. Easy, Lorne—good for you—that was well done!" as he swerved the fish to leeward and prevented him from bumping against the boat. It was as scrappy a little contest as we saw that day, but Lorne finally landed him and came nearly dancing a jig in the boat to celebrate. I looked up at Lorne and asked him innocently where his goose pimples were. I love to tease that boy because he is so full of mischief himself, and anyhow, I like boys.

But I was soon having troubles of my own. No sooner had Lorne drawn his breath of relief and exultation than my line began to swish through the water. Zip!—it went, and the golden gleam of a fish's side arched up near the surface of the water and sank again out of sight. "Hello, Doctor," cried Lorne, "who wants a fire now? Cracky, but you've got the mate to mine. Stick to him, Doctor—he's a beauty!" I was not so agile as Lorne, so I did not stand up in the boat, but sat in the seat and made my fight from that point of vantage—or disadvantage. I wasn't thinking a bit about filling disto-occlusal cavities in lower third molars at that moment. An earthquake might have shaken the rocks about me, but I should have been oblivious to it all. At last I lifted him free from the water, but apparently unwilling to give up the fight. He came straight at me through the air and hit me a swat beside the head with his tail, then swinging back again he hit me on the other side before he tumbled into the boat.

"Here!" yelled Dr. Cunningham from the shore, "I draw the line at that! I am perfectly willing to do almost anything for my guests, but I do object to having that hat of mine treated in such a flippant manner. You may think that hat is old, and so it is, but I have a little respect left for it yet, and I don't want it to smell so strong of fish forever after."

That is one trouble with a black bass. Isaak Walton himself in the day of his greatest glory could never predict which way a black bass is likely to jump next. A bass will change its mind oftener in a minute than a sweet girl graduate, which makes the bass all the more interesting—likewise the graduate.

THE VETERAN AND THE BASS.

When we returned to "The Pines" that evening and counted our catch we found that we had thirty-six as beautiful black bass as ever charmed the eye of an angler. And not one of them spoiled, let me tell you. Jimmy is an artist at cleaning fish, and he soon had a box packed full in ice for us to bring away, while we enjoyed another fish supper that night with as much gusto as if they had been the first we had tasted.

The evening was cool, so the Doctor lighted a log fire in the big open fireplace in the cottage, and we all sat about it toasting our shins and watching the antics of the flames till one after another of the party began to nod. How the beneficent god of sleep gently wraps his witching mantle about one's senses under the spell of the "Music of the needles of the pines" outside, and the rhythmic heaving of the waters along the shore. And such sleep! Well, I suppose the conscience is clearer away from the contentions of civilization, where Nature is having some kind of a chance.

Next day we heaved a sigh, got on board the "Hermes," took the canoe in tow and started down the bay for Parry Sound. The wind was a bit fresh and Dr. Cunningham kept his weather eye out. But the "Hermes" wouldn't give a snap of your finger for water that wasn't a little rough, and she simply romped through it. Such a delightful cruise I have never had, and I wish all the world could have had the same enjoyment. Lorne placed the box of fish in the stern of the canoe to hold her steady, but at times she bobbed like a cork. I watched that box with some concern till the Doctor told me that if the fish went overboard he would send Lorne in after them. This settled the matter, and I lay back content. I had confidence that Lorne could capture anything he went after in the bay, having seen him the night before take his canoe out in the deep water and calmly upset her to wash her out, and then play with her like a spaniel playing with a plank.

As we neared Snug Harbor Light Dr. Cunningham thought the weather outside looked as if it were taking off its coat for a scrap, and so he ran the "Hermes" into the harbor to see what would happen. I was thankful for this later as it gave me an opportunity to examine a modern light house. Mr. Brown, the keeper, took me up to the—the—well, the top of the thing. I have forgotten the technical name, but it was right where the light is made, and I never was so greatly astonished. When he turned on the acetylene gas (which, by the way, is kept in an immense cylinder out on the rocks) and touched a match to it the only flame that came from it were two small jets less then an inch in diameter. It is almost inconceivable to think that the large lens about a foot away can so manipulate the light from that little flame as to carry it so many miles out to sea. Truly, the wonders of modern science are well nigh past comprehension.

Mr. Brown also showed us a fine collection of stuffed birds of many varieties—all his own handiwork. He is surely a genius in this line, and it was exceedingly interesting to hear him explain the habits of the various species. To my eye, the most exquisite thing he had was a beautiful deer's head with the horns in the velvet. I have never yet seen so perfect a head anywhere, and the velvet covering the horns softened the effect and gave it a touch of fawn-like delicacy which was really indescribable. I didn't ask Mr. Brown how he came to get a deer at the season when the horns are in velvet, but it is most likely that this particular deer, knowing Mr. Brown's taste for rare specimens, just swam over to Snug Harbor and slipped on the rocks and broke its neck on purpose. In any event, I am sure that no government inspector or hunter will ever inquire how it was obtained when he sees the head.

The weather having recovered from its huff and put on its coat again, we started for the final run to the Sound. The little "Hermes" came through like a clipper, and if you want to know it, that kind of transportation has the big passenger boats beaten to a standstill for pure enjoyment.

The next morning the Veteran and I, loaded with black bass and blueberries, took the train for Blackwater, leaving behind us some of the best people the sun ever shone upon. It seems to me as I go through the world I am more and more impressed with the good there is in it. One trip like that should cure the most pronounced pessimist of his distrust of human nature. Such unselfish devotion as we received, such consideration, such a continual care for our comfort, and withal the delightful impression that our hosts were enjoying our visit as much as we—which of course from our point of view could not be possible. Verily, the world is growing better, and the good people are increasing in number. If you want to meet the very best, go to Parry Sound.

(THE END.)

A PROTEST FROM ONE OF MY READERS.

[I have just received the following protest from a man whose feelings I would not willingly hurt for love or money. Dr. Rohland is so considerate of the feelings of others, he is so charitable, so willing to overlook the faults and frailties of his fellow man, and altogether so lovable and true a friend, that I am in deep humiliation over having given him a moment's pain. It will be noted that the vacation series have promptly been brought to a close on receipt of his protest. I hereby humbly crave his pardon, and placing my hand over the place where my heart ought to be I solemnly promise never to do so again—until the next time.]

ALTON, ILL., October 1, 1907.

My Dear Editor—See here! I wish you would quit your thrilling tales of summer adventure by land and sea. I can't stand it! After reading them, I simply go off in a trance, and I can just feel the stinging spray dashing into my face and inhale deep draughts of invigorating lake ozone, and revel in the glorious sunshine as we skim over the lake.

I know just where you caught that four pound bass over by that bluff of rocks, and I can feel the jerk on my line that gives me notice of the approaching contest. I can hear the reel sing joyously as he runs away with a wild rush, and my heart simply stands still with apprehension as he jumps clear out of the water in a frantic effort to shake the hook—merciful providence, if it will only hold!—and when the tightened line tells me that I still have him, my heart starts off with a bound in a mad ecstatic race with his last grand dash for liberty, and when I finally land him!—the triumphant ecstacy of it!—and I shake hands indiscriminately with the Veteran, and the Collector and—and—Elizabeth and Doctor and Mrs. Cunningham and everybody—until I come to, all out of breath, with only the usual everyday walls of my office about me, and I gradually become conscious of a plaintive voice pouring its tale of woe into my unwilling ears, about how "that tooth you treated yesterday, that you said would be all right, has just been nearly killing me ever since, and its worse now than ever"!

The drop is just too sudden and disconcerting! Let up, won't you?

But if you do continue, don't, on your life, don't neglect to send me my next number of the REVIEW!

Yours in trouble,

C. B. ROHLAND.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

DEAR MR. EDITOR:

The "Dental Ball," so to speak, was duly opened for New York and vicinity by the New York Institute of Stomatology on Tuesday evening, October 1st, being the first society in the field. We understood that the attendance at this first meeting was very slim, and but little of any note accomplished. In all probability, the following meeting of the First District Dental Society in memory of our departed friends, overshadowed everything else and caused the slim attendance and want of interest in the institute. Early in the month of October the following black bordered notice was received:

IN MEMORIAM.

DR. W. D. MILLER,	DR. J. BOND LITTIG,
DR. JOHN I. HART,	DR. R. C. BREWSTER.

The members of the New York Odontological Society, First District Dental Society. Second District Dental Society, Psi Omega and Delta Sigma Delta Fraternities, will meet under the auspices of the First District Dental Society of the State of New York, on Tuesday, October 8th, at 8 o'clock, at the New York Academy of Medicine, 17 West Forty-third street, to honor the memory of our deceased members.

Short addresses will be made by prominent members of the dental profession.

H. L. WHEELER, Secretary.

In the short interim before this meeting, two other gentlemen well known in our profession found the "Great Majority," viz., Dr. Eugene Palmer and Dr. S. L. Goldsmith.

In consequence this memorial meeting was for six instead of four. A large audience assembled on the evening of October 8th in the auditorium of the Academy of Medicine, 17 West Forty-third street. The president of the First District Dental Society, Doctor Taylor, occupied the chair, while around him were grouped members and officers of the various societies represented. In front of the platform was a large bank of flowers bearing the words, "In Memoriam." On motion of Dr. W. W. Walker, all business was suspended and the evening devoted to the memory of our deceased friends and members.

The first speaker was Prof. Edward C. Kirk, of Philadelphia, whose duty it was especially to speak of Dr. W. D. Miller. As a lifelong personal friend, Doctor Kirk was especially qualified to speak of Doctor Miller.

Prof. F. D. Weisse, of New York, followed with remarks eulogistic of his associate in the New York College of Dentistry, Prof. J. Bond Littig. Following him, and to speak from the side of personal friendship with Doctor Littig, came "King Arthur," of a little circle known as the Knights of the Round Table of which Doctor Littig was a member. "King Arthur" was none other than that warhorse of the dental profession, Dr. A. L. Northrop. He commented upon the fact that this meeting was called to consider the virtues of four of our members and that since the call two others had passed beyond, making six whose memories were dear.

Dr. Ellison Hillyer, of Brooklyn, N. Y., who had been for years a close companion of Doctor Littig in the work at the New York College of Dentistry, followed with a touching tribute to Doctor Littig's many virtues.

Dr. Wm. Carr then spoke especially of Dr. John I. Hart, with whom he had been so many years associated in the work of the First District Dental Society, and in the New York College of Dental and Oral Surgery, formerly the New York Dental School. He also paid a tribute to Doctor Littig.

Prof. R. M. Sanger, of Orange, N. J., who had been for years associated with Doctor Hart in educational matters, paid a glowing tribute to his friend's memory.

Dr. W. D. Tracy, as representing Delta Sigma Delta, spoke of all our loved and gone members.

Dr. R. Ottolengui, while speaking of all who had recently left us, spoke especially of the life and work of Dr. R. C. Brewster, of Brooklyn, with whom he was intimately acquainted.

Dr. F. C. Walker, of Brooklyn, as representing the "Interstate Dental Fraternity," spoke of all, but especially Doctors Hart and Littig. Dr. Meyer L. Rhein, after a brief tribute to all, spoke at some length of Dr. S. L. Goldsmith, with whom he had had years' of acquaintance. Dr. Safford G. Perry, in his own inimitable manner, spoke most feelingly of the loss we all had sustained by the death of our friends, and then in detail spoke of Dr. Eugene Palmer and his sudden demise. This comprised the list of speakers as planned, but Dr. James McManus, of Hartford, Conn., and Dr. A. W. Harlan, of

New York, were both called on by the president, and responded in brief and eulogistic remarks. It was not a mournful occasion, but was emphatically a serious, sober one.

The Second District Dental Society (Brooklyn) held its meeting on the evening of October 14th at the Kings County Medical Society's library rooms, Brooklyn. After the usual routine of business, the president, Doctor Hutchinson, called on Dr. F. A. Gough, of Brooklyn, one of our foremost orthodontists, who presented for inspection a case which he had shown at the May meeting. It was an interesting exhibition of skill and success. The paper of the evening, "Some Random Experiences in Dental Meetings," was then presented by Dr. Charles A. Meeker, of Newark, N. J. It was expected that the paper would deal with dental societies in general, whereas it related entirely to New Jersey and to why and how New Jersey dental societies have succeeded. Doctor Meeker gave in detail his experiences through many years in the executive work of both the New Jersey State Dental Society and the C. D. A. of N., N. J.

Dr. W. W. Walker, of New York, opened the discussion in his usual happy way, "jollying" everybody, but saying some good things to think over, at that. Doctor Hines, of Newark; Dr. J. G. Palmer, of New York; Dr. B. F. Luckey, of Paterson, N. J., and others followed, emphasizing the fact that some one man has to do the greater part of the work in all societies and that New Jersey has been fortunate in having one so unselfish as Doctor Meeker to look after her interests, and that the success attending dental meetings in New Jersey, which success other societies might attain, was obtained by hard work on the part of faithful executives like Doctor Meeker,

Yours truly, "THE BURROUGHS."

INDIANAPOLIS, IND., October 15, 1907.

TO THE EDITOR:

Permit me to offer a little friendly criticism on Dr. E. J. Perry's article in the October DENTAL REVIEW, which bears the title "Invention, Device, the Cast Gold Inlay and Dr. W. H. Taggart." In doing so, I wish first to concur in all that Doctor Perry says relative to Doctor Taggart's inventive skill and his personality. The dental profession owes much to Doctor Taggart for the good things he has given it, and is both appreciative of, and grateful for, the time and labor he has devoted to the advancement of dental science. I do not think any one wishes to detract from him one atom of glory which is rightly his as an original thinker and an inventor. Conceding for the sake of argument, that Doctor Taggart is the originator in the art of casting gold inlays and the inventor of a very ingenious machine for so doing, is it in accordance with scientific advancement that all other thinkers and originators in the profession should say, "the field is his; we have no right to apply ourselves to any other means of casting gold inlays?" Doctor Perry cites the fact that Howe was the inventor of the sewing machine. Are we using Howe sewing machines in our homes to-day? Stevenson likewise invented the locomotive, yet we would not care to journey from Chicago to New York in an original Stevenson locomotive nowadays. Howe and Stevenson are names which will always be associated with the sewing-machine and the locomotive, yet credit is due to men who have wrought the changes and improvements which have resulted in twentieth century models of their inventions. The statement "to use a device for casting gold inlays not made under the Taggart patents is like using stolen property" does not sound like Doctor Perry, yet it appears very close to his signature.

No one is more opposed to the cribbing of ideas or robbing men of the fruits of their labor, than I. This sort of thing is too commonly practiced in our glorious United States; still, if there is more than one road that leads to a given goal, or to be explicit, if there are ways of casting gold inlays other than air pressure in its various forms, I see no reason why they should not be applied and the profession be allowed to judge for itself the relative merits of the "devices" offered on the market.

Doctor Perry's final appeal to Illinois patriotism is more characteristic of his genial self, but what about Indiana? We seem to have one man who can cast gold inlays in a way quite different from that of Doctor Taggart and who is willing to acknowledge that there is a distinction between the words "invention" and "device," and to give his friend all the glory there is coming to him.

HARRY C. KAHLO.

PRACTICAL HINTS.

Sociability:—Nothing so dwarfs a man in any walk of life as isolation; nothing so broadens him as frequent, if not constant, intercourse with those engaged in the same occupation.—*E. K. Blair, Waverly, Ill.*

Diagnosing Children's Teeth:—How many dentists are there, in diagnosing a set of teeth for a young patient, fall into that old habit of searching for caries, but never ask the patient to close the teeth that they might study the occlusion to see if dentition be proceeding in a normal or abnormal condition? I venture the assertion that there are many practicing dentistry today who do not know the correct relation of a full set of teeth in normal occlusion.—*E. L. Burroughs, Edwardsville, Ill.*

Gold and Amalgam in Combination:—In many instances of extreme decay in molars and bicuspids, gold foil will preserve such teeth when it is placed in apposition to amalgam on the distal surfaces, much better than gold will alone. When I see some of these fillings that were put in twenty-five and thirty years ago, standing up well today, I am convinced that there is a field for that combination of gold and amalgam in the preservation of teeth. I am not sure yet of the true explanation, but my theory is that by putting the two metals together we have a short circuiting of electrical current which almost always results in a beautiful oxidation of the baser metal and clean surface of gold, and as a result of this short circuiting there is an electrical impulse which is inimical to the growth of bacteria. That has been proven so conclusively that we can state it as a fact.—*Charles P. Pruyn, Chicago.*

"Whited Sepulchers":—When will dentists learn that the old fad of lining a rubber plate with gold or aluminum is of no possible advantage, but on the other hand is simply a delusion making the denture a "whited sepulcher"? The rubber is still there the same non-conductor, with its heat retaining properties, ruining 80 per cent of upper jaws.

A 28-gauge gold plate, if covered with rubber all over, would have no advantage over rubber alone.

Instead of bringing to the front, every once in a while, these useless methods, the constant effort should be made to stop the use of rubber for permanent work on the upper jaw and substitute aluminum, which is as cheap none should feel compelled to wear the non-conducting material. It is just as easy to fit a metal plate as rubber, and in flat jaws better results are obtained.—*L. P. Haskell, Chicago.*

The First Permanent Molar:—I wish to emphasize the facts that have previously been presented by Dr. Grafton Munroe. The first permanent molar is the key which preserves the normal relation between the upper and lower jaws in the whole period of loss and replacement of the temporary denture. It therefore becomes the duty of every general practitioner in his examination of every child's mouth to note among the first things whether the first permanent molars are in normal occlusion. If they are not, the child needs either his assistance or the assistance of an orthodontist at once, because we have every reason to believe that if they are allowed to remain in abnormal occlusion there will be more and more complications as the permanent teeth erupt, while, if they are restored to their normal occlusion, the occlusion of the permanent teeth as they erupt will probably be more nearly correct.—*Fred B. Noyes, Chicago.*

Inserting and Finishing Gold Foil Fillings:—The placing and malleting of gold is a most important factor. I believe that the cause of many failures can be attributed to improper placing of the gold. The knack of adapting and condensing gold by hand pressure is familiar to few. Were it more generally adopted, I believe we would have fewer failures. The finishing of these fillings is not the tedious and distressing operation that it is pictured. The carrying of our margins well to the buccal and lingual makes the finishing of these margins very easy; the intelligent use of the saw and strip soon finishes the gingival; the broad step on the occlusal soon gives way to the stone and disk, and the whole operation from start to finish seldom takes over an hour, and when complete we have a filling in perfect contact with tooth surface, with enamel prisms safely guarded, seated so that it resists stress and not dependent on the fickleness of cement to hold it in place.—*Don M. Gallie, Chicago.*

Relation Between Dentist and Patient:—The patient does not desire to avail himself of the skill of the professional man because it will enrich him or advance his position in the world, but is driven to the necessity of obtaining it in order that he may be relieved of an ill or a discomfort. This relation between the dentist and the patient imposes a special moral obligation upon the one exercising his skill. They usually come dreading the operation and probable expense, without a full understanding of the time consumed in acquiring the necessary knowledge and manipulative ability to do the work skilfully and with thoroughness. Thus when we have spent what seems to them a short or long time, according to the pain endured, in doing a certain operation and ask a reasonable fee for our services, we are immediately classed with brigands or some other characters. The cause of this is probably the low prices of the inefficient, careless practitioner, or by reading certain advertisements in newspapers wherein ridiculously low prices are named for certain work.—*H. T. Davis, St. Joseph, Ill.*

Gutta Percha for Root Filling and Setting Crowns and Bridges:—The septic contents of the tubuli of a diseased root must be brought into aseptic condition, but not alone that; the root must be so completely disinfected that when its point is closed and the crown or bridge set infection cannot supervene. In such a case gutta percha is not admissible. To remain in a healthy condition such a root must be not only hermetically sealed at the foramen, but it must have its pivot so completely sealed that there can be no ingress of corrupting micro-organisms. In a healthy root, where a crown has been set with a thin layer of gutta percha, a slight leakage is a factor of little moment; but in a root which has been saved, as by fire, not only the danger of fracture through swelling of the material may exist, for moisture causes in time all gutta percha to swell, but it is also impossible to keep any root free from the ingress of moisture except with cement, and also in desperate cases, the strength imparted by cement is a factor of great importance.—*N. S. Jenkins, Dresden, Germany.*

A Common Mistake in the Practice of Orthodontia:—When we come to the actual operation of tooth movement there must be something radically wrong with common procedure when the idea prevails so universally that it is necessarily a "painful ordeal." So common is this notion that many patients, having made up their minds to be martyrs, think their teeth are not moving because there is no pain. Undoubtedly there has been, and is foundation for this belief, and I am convinced that there is a great deal of unnecessary pain. The dentist endeavors to comfort his patient with the assurance that "it is an indication that the teeth are moving." Probably true, but also an indication that something is wrong and probably they are moving too rapidly. It is a great mistake to be impatient for results, and especially at the start. Aside from considering the patient's comfort, it is a shortsighted policy to set up a pathological condition of the peridental membrane, the agent upon which we depend for our physiological changes. Light pressure will often prove more effective than heavy pressure, and it is far better to take weeks in getting movements under way, increasing force only as it can be done without pain.—*Lloyd S. Lourie, Chicago.*

MEMORANDA.

IDAHO STATE DENTAL BOARD

will meet in Boise December 26-28, 1907. Applicants must bring operating instruments and engine.

Truly yours,
E. L. BURNS.

BOARD OF DENTAL EXAMINERS, STATE OF TEXAS.

This Board will hold the next semi-annual examination at Waco, Tex., December 16, 1907. At last examination, in June, 87 applied and 31 passed.

For further information address the secretary, Dr. Bush Jones, Dallas, Tex.

KENTUCKY STATE BOARD OF DENTAL EXAMINERS.

The Kentucky State Board of Dental Examiners will meet for the examination of applicants at Louisville, December 3. For further information, blanks, etc., address J. Richard Wallace, secretary, The Masonic, Louisville, Ky.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next meeting for examination at Iowa City, December 2, 3, 4, 1907.

Written and practical examination will be required.

For further information address E. D. Brower, D. D. S., Secretary, Le Mars, Iowa.

OHIO STATE BOARD OF DENTAL EXAMINERS.

The regular semi-annual meeting of the Board of Dental Examiners of the State of Ohio will be held in Columbus, November 26, 27 and 28, 1907.

Only graduates are eligible to examination.

Application, accompanied by fee $20, should be filed with the secretary by November 16. For further information address H. C. Brown, Secretary, 185 East State street, Columbus, Ohio.

INSTITUTE OF DENTAL PEDAGOGICS.

The next annual meeting of the Institute of Dental Pedagogics will convene in New Orleans, La., December 31, 1907, and January 1, 2, 1908.

An exceptionally good program has been arranged by the executive committee. All dental college teachers are respectfully requested to attend. Full announcement of the completed program will appear in subsequent issues of this journal.

B. E. Lischer,
Secretary-Treasurer.

OHIO STATE DENTAL SOCIETY.

The forty-second annual meeting of the Ohio State Dental Society will be held in the assembly rooms of the Great Southern Hotel, Columbus, December 3, 4 and 5, 1907.

An excellent program of papers, clinics and exhibits has been prepared.

The educational advantages of such a gathering as this can be appreciated only by those who are in regular attendance at this and other leading societies, and every ethical dentist of the State should come and, if not already a member, should join.

Should you wish to stop at the Great Southern Hotel it would be well to have your rooms reserved, as there are never accommodations for all; however, other first class hotels are in the immediate vicinity.

Come on the first day and stay until the close.

F. R. Chapman,
Secretary.

RECENT PATENTS OF INTEREST TO DENTISTS.

864,054. Tooth brush, Albert Abrams, San Francisco, Cal.

863,896. Receptacle for toothpicks, Richard Beckmann, Charlottenburg, Germany.

864,465. Dental filling, John Hood, Boston, Mass.

864,569. Dental plugger, George H. Shannon, Cambridge, N. Y.

865,112. Contouring gold tooth crowns, Francis La Chapelle, San Francisco, Cal.

865,823. Apparatus for the making of molds for the casting of dental fillings and the like, William H. Taggart, Chicago, Ill.

865,733. Dental clamp, Henry B. Weagant, Owen Sound, Ont., Canada.

866,176. Artificial denture, Francis Ainsworth, St. Johns, N. B., Canada.

866,559. Dental plate punch, Edward E. Bartram, Los Angeles, Cal.

866,518. Drilling apparatus for dentists, Paul Repsold, Riga, Russia.

866,304. Removable artificial denture, Finis E. Roach, Chicago, Ill.

866,305. Fusible porcelain cement and strengthening backing for artificial dentures, Finis E. Roach, Chicago, Ill.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

THE

DENTAL REVIEW.

VOL. XXI. CHICAGO, DECEMBER, 1907. No. 12

THE ADVANTAGES OF CEMENT AS A CAVITY LINING.*

BY C. C. CORBETT, D. D. S., EDWARDSVILLE, ILL.

It appears that your committee considered this subject of sufficient importance to give it a place on the program. When one is invited to write a paper on any given subject, it is expected that he will give his views on that subject, without bias or prejudice, regardless of what opposition may be expected from his hearers. As this paper is largely based on personal experience, it may be necessary to use the pronoun I a larger number of times than may appear in good taste, so please excuse the ego of it. After graduating from the Ohio College of Dental Surgery in 1881, I practiced dentistry for thirteen years to the best of my ability, perhaps with a great many failures and a few successes. At this period I changed my method of practice, and at the beginning of 1894 commenced using cement lining for both gold and amalgam fillings, which gives me thirteen years of experience with both methods of practice. Thinking possibly that I might be going astray, as I could find no literature on the subject, I was very careful to watch the results of these fillings month by month, and year by year, and the longer I used it the greater my confidence became, until at the expiration of three years I decided to become its advocate, and stand for it regardless of opposition. In the spring of 1897 your committee invited me to give a clinic at the State Meeting in Peoria. At this meeting I inserted a gold filling for Dr. A. L. Nicholson of El Reno, Okla., using cement lining; this, so far as I know, was the first time that the Illinois State Dental Society had its attention called to this method of practice, although there are a number of others who used it several years prior to myself. While inserting the above filling some of my Chicago friends looked on a while, passed on, and remarked that "that filling would drop out in a little while." Under date of February 26, 1907, Dr. Nicholson writes "the gold filling you put in for me ten years ago in Peoria is in perfect condition," and my Chicago friend who made the prediction is now using cement lining and advocating it to his friends, and wrote me a few years ago that he "considered it the greatest advancement in the art preservative."

---

*Read before the Illinois State Dental Society, May, 1907.

At the time of our Peoria meeting in '97, my enthusiasm for this method of practice was reaching a high mark, and I predicted to some of my friends that it would become almost universal practice in ten or fifteen years. While it has not increased as rapidly as I had expected, it has gained considerably, and I have never found a person who has given it a fair trial, that is willing to go back to the old method. I have inserted over twenty thousand gold and amalgam fillings with cement lining under every one, and after all these years of experience, my confidence and enthusiasm for this method of practice knows no bounds. In fact, it is the only way a tooth should be filled. It is the opinion of the writer that cement lining is indicated under every kind of a filling or inlay, and every kind of a crown or bridge where permanent setting is intended. Our microscopists tell us that a very large per cent of gold fillings fail to fit the walls of the cavity. Dr. Black writes that "the gold fillings inserted by our skillful operators fit the cavities very well," but how about the mediocre and poorer class of operators, who are in a vast majority, say about 80 per cent. As to the poorer class of operators, I have but little to offer for them; they are a failure because they insert their fillings without preparing their cavities, in a mass of decay, and there will be little improvement with cement lining; but the mediocre class who are making an effort to prepare their cavities, and succeed in performing their operations fairly well, will receive the greatest benefit from cement lining.

If there is an infinitesimal space between any portion of a filling and the marginal cavity wall, there moisture is sure to penetrate, and where there is the slightest seepage of moisture, recurrence of decay is sure to follow. I believe that if the members of our profession could see the transverse sections of a large number of the average class of gold and amalgam fillings under the microscope, they would be amazed at the poor fitting joints and the spaces between the filling and cavity walls.

Now what is the remedy that will make you feel positive that your filling is secure from any leakage? Soft cement is a sure remedy, it is compatible to tooth structure, and there is not an infinitesimal space that is not filled. It adheres to the walls of the cavity, and glues your filling in place, making one compact mass of tooth and filling, and making it powerful enough to resist the stress of mastication, one hundred and fifty pounds. The adaptation of an inlay cannot be made equal to the adaptation of a gold or amalgam filling. An inlay cannot be made that will exclude moisture and preserve a tooth of itself. It is entirely dependent upon cement to seal the cavity from center to circumference, even to the enamel margins, and yet there is seldom a failure from an inlay, and very seldom any recurrence of decay—their success is marvelous. This being the case, is it possible for any one to give any clear, logical reason why cement is not indicated under gold and amalgam fillings? It does not retard the operation, nor is it in the way of artistic results; in fact, a gold filling can be inserted in less time with cement lining, and the adaptation of both gold and amalgam to the enamel margins can be made just as perfect with cement lining as without. It is the claim of the writer that cement lining strengthens every tooth in which it is used, either where the cavities are large or small. Even in a small four-wall cavity of the occlusal surface of a molar, the tooth is in better condition when cement lining is used. And those who do not use it fail to conserve the best interest of their patients.

Now let us consider briefly the merits of the different materials used in filling teeth. It is expected that every kind of filling material used will be of standard quality, i. e., not of an inferior make. This being admitted, the porcelain and gold inlays, and gold and amalgam fillings, are all on an equal footing when cement lining is used, so far as preserving the teeth is concerned, with this exception, the polished surfaces of some are more prophylactic than others, in this order—porcelain inlay, gold inlay, gold filling, and amalgam filling. From an esthetic point, the porcelain overshadows all others, the gold inlay and gold filling coming next, while, of course, the much despised amalgam stands at the bottom. Now just a word as to the technique of this method of practice. For a large proximal amalgam filling, prepare your cavity, which you are all supposed to know how to do. When thoroughly prepared and dried, prepare your amalgam, then mix your cement to a soft, sticky consistency, and line your cavity, then press in a good-sized piece of amalgam, using a flat burnisher, and pressing it to all parts of the cavity, allowing the cement to flow out at the sides, then see that your enamel margins are free from cement, adjust your matrix and finish inserting your filling.

For a gold filling prepare your cavity, and either make a groove or two square corners in the seat of the cavity in which to start your filling, mix some cement the same as for amalgam, and line that portion of the cavity you wish to fill first. Then use large pellets of gold and hold in place with a small plugger point, while you are condensing with a larger one. After inserting several large pellets (this means that the pellets are large in proportion to the size of the cavity), and thoroughly condensing, see that your enamel margins are free from cement, and continue your filling. When you are ready to fill another portion of the cavity, make another mix of cement and proceed as before. I nearly always make two mixes of cement for each gold filling, and sometimes three and four. There is one class of operations I would like to refer to, showing the advantage of having used a cement lining. For illustration, you have inserted a large proximal filling in a molar extending to the occlusal surface, using a cement lining; several years later your patient returns, with the tooth having been attacked with decay in the center of the occlusal surface, and extending to your filling; you commence preparing this cavity for filling or inlay, by removing all the frail portions of the tooth and the decay, until you come to the white line of cement under the proximal filling. Then you are positive you have reached a point of security, and are perfectly safe in treating that filling as one of the walls of your cavity, when if you had not had that line of cement to govern your operation, it would have been impossible to determine with the naked eye how far the seepage of moisture has extended under that filling, and the only safe procedure would be to remove it, and make a complete restoration of the two cavities combined in one. Many times has this line of cement under a filling determined my procedure, and saved me the work, and my patient the annoyance of having to remove a filling, which otherwise would have been the only safe method of action.

There is another class of operations in which I especially recommend the adoption of cement lining, and that is for preserving the deciduous teeth. There are many practitioners in the state today who do not realize the importance of retaining these teeth in their places until the proper time for extraction. It is the duty of every dentist, who has not already done so, to take up the study of malocclusions, "their causes and classification based on the study of the normal." Then they will be able to appreciate the importance of preserving the deciduous teeth until extraction is indicated.

I will state that I have had my full quota of these teeth to care for, and will recite one case. A mother brought her five and one-half year old daughter to my office for consultation. I explained to her the importance of retaining these teeth in the mouth, and as a result, I devitalized two of them and inserted ten fillings, most of them proximal cavities. One year later she returned with the ten fillings in place and I inserted one more, and when she was seven and one-half years old I filled two of her first permanent molars and observed eleven fillings in her deciduous teeth, ten of which had been in over two years. I am sure it would have been impossible to retain this number of fillings in the deciduous teeth without cement lining. You cannot prepare these teeth for filling along the lines of scientific cavity preparation, or extenson for prevention, or the withdrawal of a matrix for an inlay, but you must use your excavators, remove all the decay, smooth the edges with a sand paper disk, fill with amalgam, using soft cement lining, and you have preserved these teeth for a considerable length of time, and in all probability have done your little patient a service that will be a benefit for life.

Now just a word as to the value of cement as anchorage. I believe that very few dentists have any conception of the great value of cement when used as anchorage, and there are none that appreciate its value more than the inlay worker. It is his mainstay. Take it away from him, and he will be obliged to stop housekeeping; it is the only thing that preserves his tooth from decay, and the only thing that holds his inlay in place. I venture the assertion that when one of our great inlay workers finds a tooth decayed where it is impracticable to put in an inlay, that whatever he fills that tooth with, he lines the cavity with cement, not only for the preservation of the tooth, but to glue his filling in place. If there are any here who doubt the value of cement as anchorage, they certainly would be convinced if they would cement an anchor band on a tooth for several months, remove it, and cleave the cement from the smooth surface of the enamel, which sometimes requires a chisel and mallet. In years past how many hundreds of large contour gold fillings have been inserted in the anterior teeth, by men whose skill and judgment had been about perfect in shaping their cavities for retention, without weakening the teeth, and yet lacked just sufficient anchorage to make them successful. Had they used cement lining, success would have crowned their efforts.

Having learned that Dr. J. P. Root of Kansas City has used cement lining for many years, I wrote him for an expression of his views on the subject. He writes as follows:

Dr. C. C. Corbett.

Dear Sir: I use soft cement under all amalgam fillings regardless of size and location, and when necessary do not hesitate to cut away sound dentine to provide room for cement. Have followed this procedure for fifteen years, and there is no guess work regarding results. The reasons are: The cement is a non-conductor. It is a wall strengthener. It will absolutely prevent discoloration of tooth if properly used, and by properly used I mean lining the entire cavity except enamel margins with cement. The more cement under any metal filling the better, providing sufficient space is left for a body of metal having required strength. If you have a defective margin, recurrent decay will amount to a trifle when cavity is lined.

Lastly, if cement is properly mixed and used, it will be almost impossible for an amalgam filling to come out. Of course, this is not "the feature," as our cavity preparation should be right, but at times it is not, and if a patient enters my office and announces the fact one of my amlgam fillings has dropped out, I emphatically deny such assertion, and so far (except once) have been able with my records to prove myself right. In making this statement, I mean where a filling comes out within an unreasonable time, say five years. Of course, in a longer period, recurrence of decay could destroy entire tooth structure. Possibly fillings may have been lost without my knowledge, as all "failures do not come home to roost."

In crown or buccal cavities, the amalgam is crowded into cement regardless of margins, as their exposure is such that before cavity is filled they can be cleaned if any cement has been crowded out. In proximal cavities where a matrix is used (which should be always) care must be taken of cervical, lingual and buccal margins. But, suppose you did crowd cement over margin, it would not be probably any more than that used in an inlay, and we know in such cases the cement stands. Yours, (Signed) J. P. Root, Professor Operative Dentistry, Kansas City Dental College.

I do not advocate that this method makes the practice of dentistry easy; it does not; there is nothing easy in dentistry and never will be, but the advantages of cement lining are numerous, and it rewards painstaking.

A COMPARATIVE REVIEW OF THE LAST TWENTY-FIVE YEARS OF DENTISTRY AS GATHERED FROM A STUDY OF THE PROCEEDINGS OF THIS SOCIETY.*

BY E. H. ALLEN, D. D. S., FREEPORT, ILL.

No one can be otherwise than impressed by a review of the proceedings of this Society as published from year to year. It was a wise provision the Society made in its early days, to publish and preserve the transactions of each meeting, thereby adding an important unit to Dental Literature. In looking over the transactions of years past, I am impressed with the earnestness of those who took part in the annual meetings. I was fresh from college then; and was surprised at what was set before the meeting in the way of papers and discussions, and many of those who were taking the active part had never attended a dental college, but were up-to-date with the latest in dental science as it was understood at that time.

I sometimes wonder if the young dentist of today realizes how important was the work done twenty-five years ago. Those men who were in active practice and society work at that time made dentistry what it is today. They were arguing, at that time, that dentistry was a specialty of medicine and some implored the medical profession to recognize us as such. But today we stand as a profession independent of the medical profession, in so much that we are an individual, not a part or specialty of the medical profession. However, we are, without doubt, a near relation. This is the conclusion to be drawn by careful review of our proceedings. I think the same conclusion would be reached by study of the proceedings of other dental societies in different parts of our land. Time and space forbid that any but a brief review be taken of the work as we go along

Dental education in this period has made great strides in advance.

---

*Read before the Illinois State Dental Society, May, 1907.

In the beginning the requirements for graduation were attendance at two winter terms or courses of lectures of five months each and the passing of examination satisfactory to the faculty of the college. In some cases, five years' practice was taken as equivalent to one course of lectures. No preliminary examination for entrance was required. The course of study comprised anatomy, physiology, operative and prosthetic dentistry, dental materia medica and therapeutics, histology, and pathology, so far as they related to dentistry, chemistry and metallurgy, and a very limited course of study in oral surgery. This is about all that comprised the course of study in the dental college of 1883. The student had opportunity in the infirmary and mechanical laboratories to gain the practical part under the direction of demonstrators.

I need not cite to you in particular what the dental college is today, but by comparison you will readily see the great change for a higher and more thorough equipment the new graduate of the present day has when he begins the practice of dentistry.

What has brought this about is, no doubt, the stimulation received from the papers read and discussed in this and other dental societies. Scarcely a meeting was held but that the subject of dental education came up for attention, either in a paper or recommendations in the president's address, or in some way cropped out in the discussions. This may be said to be true of all dental societies throughout our land. Dental legislation has also been an important factor in bringing about this great advance.

Operative dentistry has also come in for its share of improvement. In those days there were men in the profession who were beautiful operators, who made beautiful, fine gold fillings. They will never be forgotten. Their names are inseparable from dentistry. I am proud to say that a fair proportion of them were members of this Society, and some of them are with us today; others have passed beyond. In my opinion, the influence of these men was of an incalculable value in bringing together the units which have made the dental profession what it is today. Twenty-five years ago the war between gold and amalgam was on the wane. This had been very fierce, but in spite of the opposition amalgam survived. It was demonstrated that it had merit; that there were cases in which its use was indicated. This led to a study of alloys, their physical formation and properties and what formula gave the best results. No doubt to

Dr. G. V. Black more than any one else, we are indebted for what definite knowledge we have of amalgam.

Twenty-five years ago treatment and root filling were, to say the most, unsatisfactory and uncertain. Gold and tin foil were quite generally used, but it was conceded that these were not satisfactory materials for root filling, especially in the molars. Oxy chloride of zinc was used to some extent for root filling. Chloro percha was about this time claiming the attention of the profession. This was followed by the gutta percha cone, which was forced into the root canal following the chlora-percha. This has since been the general method of filling root canals. For the past two years I have used instead gutta percha dissolved in eucalyptol, and think it does not show so great shrinkage. Treatment of root canals has become more aseptic than antiseptic. We now use the antiseptic after the canal is aseptic. We are also more careful to have our instruments aseptic, clean or sterile.

In *Dental Cosmos* 1880, p. 382, there is described a method of correctly filling the roots of a lower molar. First the apical foramen was closed with gold foil to about ¼ to 1-6 of the canal, then on top of this gutta percha was used to fill the canal, then lastly the pulp chamber was filled with oxy phosphate. A good method, if the gold can be successfully placed to fill the part of the canal claimed. I can't do it.

Crown and bridge work began to sweep over the profession like a tidal wave. We all began to do crown and bridge work to the exclusion of nearly everything else. We have had all kinds of crowns, and all kinds of bridges. I have made at least one kind of both crowns and bridges, namely, the bad kind. But according to the old adage, "Our failures have been stepping stones to success." Bridge work and crowns have gone from an imperfect beginning to a high degree of development. We have learned to exercise proper judgment so that we can decide more correctly when a bridge is indicated, thereby saving ourselves the humiliating failure of an ill advised bridge. The advent of porcelain was a great boon for crown and bridge work, and has enabled us to dispense with the undue exposure of gold. Yes, we have advanced.

Twenty-five years ago there had been some inlay work done, both gold and porcelain. It was noticed that the cement used did not dissolve at the joint, at least not any where near like it did when used as a filling. Though now and then some one would come out with something concerning the inlay, it is not until comparatively recent years that any great activity has been displayed along these lines, and, strange to say, porcelain came first. Then the limitations of porcelain became manifest and the gold inlays supplied the missing link. Therefore in the development of the porcelain inlay, we must admit that our ideals have been raised, that we are undoubtedly more skilfully artistic.

What effect has all this upon the gold and amalgam fillings? It would seem in the first place that the porcelain inlay supplies the lack of artistic effect that is produced by the use of gold in the anterior teeth, and where the porcelain inlay is not subjected to sufficient stress to cause fracture it is surely indicated. But where cavities in the anterior teeth are not large and little if any of the filling is exposed to view, the gold filling still has a place in these teeth, and a well prepared cavity, well filled with gold, will outlast any other filling. When we consider the bicuspids and molars the gold inlay surely is a great saver of time and nervous energy on the part of the dentist and great discomfort on the part of the patient, and makes an excellent and permanent stopping for a cavity. Amalgam has its place and will, I think, always be used because of its cheapness and ease of manipulation.

Cement has been used for twenty-five years to fill the major part of a large cavity, both for protection of the pulp and to support frail walls. After the cement had become hard the operation was finished with the permanent filling. But a few years later, some one rubbed the gold or amalgam into the soft cement and found that it stuck. From this we have what is known as cement anchorage, which does, in many cases, furnish excellent retention. Cement is also used for starting a filling.

In those days there was no clear understanding about how a cavity should be prepared. The underlying principles were not understood. But one of our honored members brought out a system of cavity preparation, the principles of which are correct. This is known the world over as "Extension for Prevention." Others in this society have made valuable contributions to the subject of cavity preparation, both for fillings and inlays.

Prosthetic dentistry, in other words mechanical dentistry, has not perhaps made such great advances. This may be explained in two ways. First, that the tendency has been to save the natural teeth, in that we have succeeded well. Second, that the higher class of mechanical dentistry was well developed in those days, but on the other hand, we see every day people who are wearing "false teeth" that are just as fierce in looks and adaptation as any of the past days. In this respect, this part of our work has not advanced.

Oral surgery. I will not say much about this art except that it is more nearly related to medicine than is a general practice of dentistry. Nevertheless, we are proud of the work done in oral surgery by our own members as well as those throughout the land. Of course, there is great advance in the past twenty-five years, as there has been in general surgery, indeed it is marvelous. However, we should not forget the credit due those who were working along these lines at that time. Now as I don't know very much about oral surgery, I will leave it before I get beyond my depth.

Orthodontia. In days gone by there were cases in orthodontia to be treated, and good results were had undoubtedly. The foundation for the development of this speciality of dentistry was laid years ago. About twenty-five years ago, Dr. J. N. Farrer was publishing a series of articles on correction of irregularities of the teeth. This was what it was called in those days. Dr. J. J. R. Patrick invented a contrivance which was intended to be applicable to most any case. The next important advance in orthodontia (as it is now called) was brought out by Dr. Angle, then of Minneapolis, though I am not certain as to whether Dr. Angel was prior to Dr. C. S. Case, then of Jackson, Mich., or not. But since then orthodontia has certainly made great advance. We have many men who have done splendid work along these lines. Orthodontia is, without doubt, a speciality of dentistry and requires special fitness and special training, and all of one's attention to secure best results in this art.

Capping pulps. Twenty-five years ago probably no subject received so much attention as conservative treatment of the pulp. To find merely an exposure of the pulp, was of no particular significance for we capped it, some in one way, some in another; each of us had the best method. If the pulp was partly devitalized we performed an "operation" called pulp amputation, capped the remainder and filled the tooth. In the meanwhile we relegated the arsenic bottle to some obscure place in the laboratory. It did not take us long to discover that these pulps did not always live; that in adult life the pulp rarely lived under a capping. But in the teeth of the young the operation if often successful. All this taught us to treat the exposed pulp problem in a rational way. The arsenic bottle is restored to its place in the medicine closet where it shares company with the cocaine used for pressure anesthesia.

Materia medica and therapeutics. We were then beginning to enlarge our list of dental medicines and our knowledge of them. The work of Dr. Harlan, a former member of this society, along these lines has been of inestimable value to the dental profession. I can recall that about the only medicines in use were carbolic acid, oil cloves, aconite and chloroform, arsenic, and solution of gum sandarac to seal in the medicament. Now we have numerous remedies to use, and investigation is going on and new remedies are constantly being added, some of great merit, others are indifferent.

Histology, embryology, bacteriology. I find that twenty-five years ago these subjects were receiving considerable attention in our meetings and the papers presented showed study and scientific research. It was about this time that Dr. Miller gave some of his papers for publication. I may say that in all these years we have had papers along these lines of great value. We have studied the enamel and its cleavage in connection with cavity preparation. In bacteriology we have with us today those who have and are doing an invaluable work along these lines.

Anesthesia, general and local. Notwithstanding all that may be said for narcotile, somnoforme and what not, nitrous oxide gas stands as it stood twenty-five years ago, as the best and safest agent for general anesthesia for minor operations.

We have local anesthesia now. It is the general opinion that there are cases where the use of cocaine is indicated but the general use of it is attended with great danger.

I cannot close without some word in reference to those who have passed to the life beyond. This society has indeed been fortunate in having within its membership those who have become celebrated beyond the confines of this society and state. Their presence when with us, and the memory they have left us must be an inspiration to all.

Today we are in the midst of great achievement. We may speculate as to what may be accomplished in the coming twenty-five years of dentistry. I doubt not but that the advance may be great, and whether we may be treating and filling teeth and performing other operations about the mouth for the saving of our teeth, in anywhere near the same way we do now, is a matter of conjecture.

Let us not forget those who were doing the work of foundation laying twenty-five years ago, who dug up the basic principles upon which we have founded the superstructure of our profession. Let us not forget that they had fewer facilities in the way of instruments and appliances and in many instances had to invent and construct instruments they worked with. All honor is due them for what they have done for us.

EXTRACTION OF TEETH.

BY M. W. OLSON, D. D. S., GALESBURG.

Of all the surgical operations performed upon the human body the extraction of teeth is the most prevalent, greatly as the loss of these organs is to be deplored. Conservatively speaking nine out of every ten physicians as well as dentists, when first in practice, have for their first patients sufferers with toothache and demanding the extraction of one or more teeth. Patients from lack of knowledge on the subject believe extraction to be the only means of comfort. As a surgeon uses his own judgment in the performance of surgical operations, so must we in the performance of the extraction of teeth, basing our knowledge on the various means of giving relief. A great many times such an operation is necessary and cannot be questioned.

The first point to be considered in this paper is, when should teeth be extracted and the reasons for so doing.

1st. Teeth, or roots of teeth which have lost their vitality from neglect or otherwise and which cannot be made useful either by filling or treatment and have become so loose as to be a cause of irritation and inflammation to the surrounding tissues. 2d. Teeth which from absence of a mate to articulate with are thereby become extended from the alveolar process and through this displacement have become a source of pain and discomfort. 3d. Teeth which have abscesses that will not yield to treatment and are threatening complications. 4th. Teeth which have become exostosed and thereby cause pain and discomfort to the patient, and all roots of teeth which have caused the

---

*Read before the Illinois State Dental Society, May, 1907.

tissues to become congested and painful, thereby causing unrelievable pain and suffering.

A great many times an upper molar whose lingual root has become exposed its whole length by absorption of the process and gum, is extracted. In these cases I have amputated the lingual root close to the bifurcation and filled the pulp canal, so saving the tooth that would otherwise have been extracted and thereby giving my patient a molar that will be useful for years to come. To extract such a tooth often deprives the patient of a very useful organ and one that they cannot afford to lose.

We also find lower molars whose crowns are entirely gone, the roots remaining, and are almost invariably extracted. Now even if one root of necessity has to be extracted, the other may, in some cases, be crowned and made to give service for years. I had such a case recently for a patient who had been informed that extraction was the only thing that could be done, and after it was crowned he was very much pleased. In most cases like these extraction is the common procedure, and it should not be. We can also save both roots by the same method a great many times, by placing a crown on each of the roots and soldering them together.

The removal of a tooth by extraction is an easy or difficult matter according as the principle involved in the operation is clearly or obscurely appreciated. There is a knack to pulling teeth, and it must be understood to be successful.

I should like to place the teeth in six classes. The first class includes the upper and lower incisors. The second class includes the upper and lower cuspids. The third class includes the upper and lower bicuspids. The fourth class includes the upper first and second molars. The fifth class includes the lower first and second molars. The sixth class includes the upper and lower third molars.

The extraction of a tooth in the first class requires the force to be applied in a twofold direction, rotary and downward for the upper centrals and laterals and the outward, inward and upward motion for the lower central incisors, as we find here the flattened cone shaped root. To extract a tooth of the second class the force is to be applied in a downward or upward, lateral and rotary motion as the case may be, as the roots of these teeth are rounded or cone shaped. The extraction of a tooth in the third class requires a lateral, upward or downward motion as the case may be, as we find here the root partly flattened. To extract a tooth of the fourth class we must use the lateral and downward motion. In these teeth we have three roots to contend with, two external cone shaped roots and one slightly flattened root looking toward the palatine arch, the force must first be applied buccally with a lateral motion so as to loosen the palatine root first, then use the lateral motion toward the palatine arch, thereby we guard against the breaking off of the palatal root. In extracting teeth of this class in this manner, much care is necessary in guarding against a too great extent of lateral motion, otherwise the roots instead of yielding, will be found to break, thus complicating matters very seriously. In extracting teeth of the fifth class the force must be applied laterally and upward. We must try to ascertain in these cases on which side the process is the thinner and apply the force in that direction first. In most cases we will find the process thinner on the labial side of the jaw. This rule does not always apply, but usually it does. These are rules which, in general, are correct, but there is such a difference in different mouths that good judgment is necessary for the skillful extraction of teeth.

The teeth of the sixth class are to be carried backward and upward, or downward and buccally. These teeth may be quite difficult or they may be quite easy of removal, owing, of course, to the shape of the roots. The third molars in both jaws are more likely to be malposed than any other teeth, but the position of the coronal portion indicates, in most cases, the shape and the position occupied by the root or roots as the case may be. Generally speaking, it is safe to conclude, if a lower third molar leans anteriorly, that its root curves, more or less, mesio-distally. The upper third molars, if malposed in the jaw, will usually lean buccally, sometimes they are set almost at right angles with the adjoining teeth. This tooth may have all its roots fused together into one, or it may have four or five roots. If the roots diverge and are supernumerary, they are as a rule small, and not infrequently some of them are broken off in extraction. The teeth or roots of teeth which, as a rule, offer the greatest difficulties in removal are the upper cuspids, lower third molars and also lower bicuspids.

Instruments used for the extraction of teeth are now made in such numerous varieties that I shall not attempt to describe them or their use. Every practitioner has a list of instruments that he uses to the best advantage in his practice, and it would be folly for me to try and reform him to some other list. The better class of instruments are nickel plated, and are of such temper, as the character of the steel is concerned, that they will retain the outline and sharpness of blades through much service, and only such instruments should be used that are made of the finest steel and in the best workmanlike manner.

Our ancestors used the often spoken of turnkey, and we are informed that some of them were experts in the use of this now antiquated instrument. We can learn a lesson from this, namely, that one should select, carefully, a set of, say, six or eight pairs of forceps and study their uses in different cases so as to become expert in their use. Personally I use a set of five selected. Even with this limited number, I find that I extract the majority of teeth in my practice with two pairs out of these five.

We are called upon quite often to extract teeth for our patients under an anesthetic, and it is wise in these cases to choose a man to give the same that understands the effect of the anesthetic to be administered and also the condition of the patient. The nature and probable duration of the operation enables the anesthetist to determine not only the most available anesthetic, but also the best position in which to place the patient. It is quite necessary to administer a laxative, and to restrict the food and drink some hours prior to the administration of the anesthetic.

It is customary with me to advise the morning as the best time for the anesthetic. Patients are not only brighter and fresher at this time, but the stomach is usually empty. The evening meal before the day of operation should be light. In nitrous oxid and somnoform anesthesia prolonged fasting is not required, but the stomach should be free at least of undigested food. The operating room should be at a temperature of about 70 degrees F. The patient should be loosely but warmly clad. Even in short nitrous oxid and somnoform anesthesia, corsets, belts and collars should be loosened, and nothing which restricts thoracic or abdominal breathing should be permitted. These precautions are not only necessary for the purpose of permitting free breathing, but should anything unforeseen occur, remedial measures may be resorted to more promptly and with greater ease.

Exostosis, as commonly met with in the mouth, is strictly speaking benign. It is generally recognized by its extreme slowness of growth, the freedom from disease in the surrounding parts and entire absence of pain, except when it meets with some peculiar obstruction.

It does not tend markedly to ulceration, and does not, except mechanically, affect the regions even most directly associated with it.

The cause of exostosis is any irritation which would stimulate the functional action of the peridental membrane, and it requires many months, and usually years for it to develop. Exostosis is sometimes chalky, sometimes dense and yellowish white and sometimes hard and polished and is nodular or diffused in its shape. It is usually found in adults or aged persons. These teeth as a rule are very hard to extract. About 25 per cent of exostosed teeth are incisors and cuspids; 75 per cent are bicuspids and molars. Any undue mechanical irritation if persistent may in due time cause or provoke exostosis. The gentle knocking together of the teeth, the cracking of nuts and other hard substances, the biting of thread, malocclusion, slight protrusion of fillings at the cervical margin under the gum, may cause exostosis. In extracting exostosed teeth we must be careful of not fracturing them, as their enlarged roots wedge themselves in the process as they are extracted. Extraction is the only cure for exostosis.

In this paper I have not touched on the subject of the extraction of the decidous teeth, feeling that it needs a separate paper to discuss the subject thoroughly, and that my paper is already too long. The subject of encysted teeth has also been left out, as I feel that these cases belong to the field of oral surgery proper. There are also many makes and special shapes of forceps, each having their adaptation to special cases, the merits of which I would not in the least depreciate, as their presence in the list of forceps to suit individual tastes seems almost to be a necessity.

PARTIAL DENTURES.*

BY E. J. PERRY D. D. S., CHICAGO.

Probably no department of our work falls so far short of complete satisfaction as the supplying of teeth in partial sets. These cases are innumerable in variety; in fact, almost every case is one by itself, and unlike any other preceding one. It is therefore that no set rule can be laid down, for their manufacture. No system can ever be universal in its application. Certain principles, however, must always be observed, because certain conditions are always present. Fixed bridges have but a small range of application for the following reasons: The biting stress upon the supplied teeth must be received by the abutments and piers, and if any number of teeth be supplied above two, the abutments will sooner or later give way, especially if opposed by natural teeth. This is not taking into account the unsanitary features of a fixed bridge, which must ever remain an unanswered objection. While the above statements are absolutely true, bridgework under its indication is an important factor in prosthesis, and he who cuts it all out is denying to his patients an invaluable service. By far the greater number of cases calling for the restoration of lost teeth, the remaining teeth or roots are not so located or are not strong enough to be available for a fixed bridge. In all of these cases the stress of mastication of the opposing teeth must be received by the alveolar ridge left by the lost teeth and the remaining teeth and roots can only serve as a means of holding the piece in position. The difficulties in these cases are rendered greater because the alveolar ridges are cushion-like and yield under stress, while the teeth serving as stays do not. Therefore, a judicious division of the stress or pressure of mastication should be made between the alveolar ridge and the attachment roots or teeth. As no system can ever be absolutely universal in its application, one must make an exhaustive study of each case presented, and use the form of attachment or stay which seems to fill the largest number of the requirements in the case in hand. The most valuable service you can render a patient is in determining the right thing to do, not alone in doing the thing right, but in doing the right thing right. A surgeon may be the most skilful in removing the appendix vermiformis: he may make a beautiful operation, and be entirely successful: yet if the appendix did not need removing, he is a failure. He did the thing right, but he failed because he did not do the right thing. Parenthetically, I fancy this if often the case.

---

*Read before the Chicago-Odontographic Society, May 21, 1907.

Now, in all these cases of partial dentures we must be careful not only to do the thing right, but to do the right thing. This brings us to a consideration of a few individual cases, and as the different cases are shown on the screen, I wish to take up the indications for the use of the various methods.

I wish here to make a statement to the point that the operator and not the prosthetic man is the one qualified to do this work, or, stated conversely, the prosthetic man who is an operator is the man most nearly fitted to do this work. Often I have seen a mouth carrying beautiful operative work, and some lost teeth supplied with a cheap adhesion plate of rubber. The operator quit with the natural teeth. Now, he comes out into the larger field, and one of equal importance, and uses his skill and operative methods in supplying or restoring broken or part sets.

It matters but little in what classification the work may be placed, prosthetic or operative, or whether prosthesis has retrograded in the last thirty years. The fact in the matter is, the operator has widened his field of work, and extended it to what may be called for want of a better name operative prosthetics, and the purely prosthetic man and the purely operative dentist are both ineffective in the fullest sense in general dental practice. All these part set schemes must be conceived in the operating room, though they may be born in the laboratory. The operative prosthetist, it seems to me, is the coming man. He makes the gold inlay; he makes the gold and porcelain crown; he makes the gold or porcelain bridge; he makes the regulating apparatus, and later he will, if he has not done so in some measure already, lift prosthesis proper up out of the sloughs, and plant it upon the terra firma of artistic and mechanical excellence. The modern operator, therefore, must be a dental mechanic as well as a dental physician, an artisan as well as an artist. He must have both executive and creative skill. It is not possible or even profitable to draw comparisons between prosthesis thirty years ago and now. These past thirty years the whole face of our profession has changed. Thirty years ago not more than half a dozen men in the United States made or could make a continuous gum set. Now, hundreds of our best men do this work. Electric furnace is the answer. Men now graduating in our best schools can show carving, gold fillings and inlays that would bring a Webb or an Atkinson into amazement. Evolution! Growth!

Our profession has only kept pace with the evolution of our times. With an educated public come higher demands; with the higher demand comes the higher profit, and with the profit comes the development; for say what you will, in the broadest sense the almighty dollar blazes the way, after all. If it were highly profitable to make dentures on vulcanite, the best men with the highest skill would make them, and it is gratifying that an educated public is demanding a higher art in this class of work, and our profession is rising to the public need. The public itself forces us to the higher plane. Our civilization demands this or that, and gets it. I therefore say to you that I believe the percentage of higher art in prosthesis is increasing at a tremendous pace.

PRESIDENT'S ADDRESS.*

BY L. H. MOORE, D. D. S., APPLETON, WIS.

Three years ago when this Society was organized we had a feeling of doubt as to its future success. Those of us who have attended the semiannual meetings know they were far from failures; all that is needed is for each member to do his duty and the future is assured.

Dentistry has been traced back to 600 B. C. when specimens of dental work were found. Reference to dental operations are found in the writings of Hippocrates in the fifth century B. C.

The oldest book known on dentistry was printed in German, by a Peter Jordan, written by an anonymous writer, for the lay reader, in 1532. Since 1728 dental literature may be said to have started in earnest.

Porcelain for teeth was first proposed during this same year, but the manufacture was actually begun between 1774-6 by a French chemist assisted by a dentist by the name of Du Bois of Paris.

Dr. Gardette, of Philadelphia, is said to have been the first to use gold as a base, in 1787.

In 1851 Goodyear discovered a method of making a hard rubber compound called vulcanite, and in '55 he had it patented.

Before the introduction of gold, lead foil was used as a filling material.

Filling, proper, up to the beginning of the nineteenth century was practiced very seldom. Gold, then was used in the form of foil or rolled gold of the noncohesive variety. Sponge or crystal gold was introduced in 1846 by A. J. Watt and in 1853 a Dr. Arthur recommended the use of cohesive gold.

Amalgam was introduced in 1826. Following these closely we have the different forms of cement, gutta percha, porcelain, artificial enamel, etc. Nothing has been discovered or invented that has been so much appreciated by everybody as the different anesthetics.

---

*Read before the Fox River Valley Dental Society.

The improvement in dental instruments and equipments is too well known to even mention.

In looking back over this brief review we see dentistry is of ancient origin, but, as practiced today, is very modern. The progress made in all the different branches, especially within the last fifty years, should inspire us as a society and individually to try and have a place in dental history. It is said that "everything comes to him who hustles while he waits" and there is no reason why we cannot be one of the hustlers.

Our work in the future will always be to take care of diseased and healthy teeth and surrounding tissue. Now, and more so in the future, dentistry will be specialized.

Dental prophylaxis is of great importance and is worthy of much study and investigation.

Orthodontia is where most of us are lacking and many times we can neither give the cause or effect a cure for the case at hand.

Dental surgery falls within our sphere, as our degrees would signify, but how many times it is the case that we call on the M. D. to do the work for us. Why is it that as a rule we confine ourselves to the mechanical part rather than embracing all that properly belongs to us? Is it because we did not receive the proper training from our Alma Mater or do we lack in ability? Is there, or should there be any good reason why my friend the M. D. is better fitted to operate on a diseased antrum than I am?

Do we, as members of a leading profession, bear the same relation to our patients or clients as the other professions do? Or is it not a fact, that, as a rule, we merely perform the work we are asked to do, rather than that which our conscience dictates? The man who seeks legal advice does not dictate the law, neither does he write the prescription after consulting the physician.

From my own experience it seems to me that we soon conduct ourselves like machines, unsympathetic toward our patients. There is no man so much of a soldier, no lady so brave but what they appreciate gentle treatment. If it were necessary for us to take the dose we administer we would not wonder why people dread the dental chairs.

Is dentistry drifting into a commercial department store, side line business rather than into a dignified profession?

We have people who call us up by 'phone (and down too) and ask how much we charge for gold fillings, plates, crowns, etc., and whether or not we give a ten years guarantee. Who is to blame for this? Right here in our Society is the place to begin to inspire each other to be ethical men and women and put a stop to this cheap dental parlor business.

The subject of fees is one that is always of interest to us. Do we receive sufficient remuneration for the services we give and the benefits derived? Is it not a fact that the extraction of some teeth is more difficult, requires more skill and subject to much more danger than a great many cases of surgery, where trained nurses, sterilized outfits and wise acting surgeons are to be paid for without a murmur? Their operations are always a success if the patient survives the ordeal. We cannot bury our mistakes but must face them, neither can we take an appeal to a higher court and have the verdict reversed in our favor.

There are, perhaps, a few who are practicing dentistry becuse of their love for it, but the majority, because it offers opportunities to earn a livelihood. Very few of us conduct our practices in a business-like way. We are an easy mark for all agents and supply men. If our wives or mothers had as much stuff left on approval (and installment plans) as we do, it would be necessary for us to build extra store room. I do not thing there is any practice so small but that with proper management there can always be a credit in the bank. Too many of us have a champagne appetite and a beer income.

A subject that is of interest to us as a society at this particular time is, Are we in favor of the scheme of reorganizing the societies in this state as they are in Illinois, whereby all district and county organizations are subordinate to the state society, or is it better for each to be independent?

The object of our Society should be to make better dentists of its members; to inspire them to write and discuss papers; to present new ideas or old ones improved on in clinical work; to arouse a better fraternal feeling and to bring our chosen profession up so it will be second to none in the estimation of the laiety.

President Hadley of Yale, in an address recently said: "Of all the dangers to which a reasonable good man is subject, I honestly believe, that the greatest is the danger of losing the sense of moral proportion; of overvaluing achievement as compared with purpose; of overestimating the small amount of visible work each of us has done or failed to do compared with the vast amount of invisible work that still remains to be done. There is no success so great as to be worth much if it leads a man to stop working; and no failure so great as to be irreparable unless it leads a man to stop trying."

SINUSITIS.*

BY W. F. KELSEY, D. D. S., MARSEILLES, FRANCE.

Although of late years the treatment of sinusitis is considered by rhinologists as one of the prerogatives of their profession, the antrum of Highmore is situated in a kind of neutral zone, separating the exclusive domain of the medical specialist from that of the surgeon dentist, though accessible to both from his own particular field of action. If dental intervention is rarely justifiable beyond the maxillary, the correlation that exists between the various cranial sinuses and the similarity of the affections to which they are subject, excuses some brief generalities when treating of antral empyema, in fact it is authoritatively stated that in thirty per cent of the cases presented, antral trouble is accompanied by, if not directly due to infection of one or more of the other sinuses. Too much stress is, perhaps, laid upon the localization of the malady, whereas in reality it is frequently only a local manifestation of the lack of resistance of a debilitated organism. Chief among the predisposing causes are syphilis, arthritis, diabetes, Brights' disease, dyspepsia with its attendant anemia, tuberculosis, diphtheria, certain fevers, a scrofulous diathesis and above all catarrh and influenza. Gallois says "Not only can sinusitis be caused by chronic catarrh, but inversely, sinusitis, especially maxillary sinusitis, may be the primary cause and rhinitis the sequence." The development of the malady, which is essentially of bacterial origin, is naturally facilitated by the less active resistance of the phagocytes in a constitution already weakened by disease. When not of buccal origin the infection finds its way into the antrum through the natural orifice, either by infiltration, proliferation of morbid germs, or mechanical propulsion, as in violently blowing the nose or taking nasal douches with water under too great pressure, or even in plugging the nares to arrest hemorrhage. Contusions, gunshot wounds or accidents of any character, even the extraction of a tooth, may produce inflammation of the lining membrane of the most violent character. Many instances are cited of empyema, provoked by the accidental introduction of foreign bodies into the antrum. Roots of teeth in attempts at extraction, broken instruments, in perforating the alveolus, bits of laminaria for enlarging the opening, nozzles of syringes, etc., but most curious of all is the case of the dentist's wife, with a very hollow molar which was treated daily with cotton and sandarach. At each renewal the cotton had disappeared, but the husband, supposing that it had fallen out, or been swallowed with the food, gave no thought to the matter until a violent inflammation of the sinus decided him to consult a rhinologist. Upon examination it was found that all the cotton had passed into the antrum, completely filling the cavity with a compact mass of putrifying vegetable fibre.

---

*Read before the American Dental Society of Europe, Rome, 1907.

It was formerly assumed that antral disease was invariably of dental origin. Bourdet, writing in the middle of the eighteenth century, not only maintained this opinion, but added that he always found the abscess due to a diseased bicuspid. In reality any upper tooth can produce antral empyema, though the theory that the disease is always dependant upon a defective dentition is entirely at variance with the results of modern investigation. The estimated relative frequency of dental and other exciting causes seems to vary according to the standpoint of the investigator. Dr. Cryer, from a dental vantage ground, found, out of sixty cases, forty-eight, or 81.6 per cent, were dependent upon a diseased condition of the dental organs; on the other side Strubel, after an exhaustive study of the question based upon all the reliable statistics he found available, arrived at the conclusion that 64.6 per cent were superinduced by inter-nasal infection. Taking into consideration the hundreds of unreported cases that modest dental practitioners have cured by simply extracting the offending tooth and administering a possible injection or two of some detersive lotion, one is led to suppose that the maxillary sinus is at least as frequently infected by buccal bacteria as by nasal micro-organisms. The prevalence of antral empyema is another question over which there is a great diversity of opinion. Kirmisson speaks of it as a very rare complaint and even insinuates that the occasional cases cited are caused by ill-advised intermeddling in order to determine whether or not disease really existed. Chiari found forty-five cases out of 2,260, or about 2 per cent of the subjects examined.

Out of 900 odd cadavers dissected in various hospitals, over one-third were found to have been affected with sinusitis at the time of death, though no data was available to show whether the infection was recent or of long standing. These statements lead to the natural supposition that thousands pass their lives in the happy unconsciousness that they are affected with a mild form of this complaint, any occasional discomfort in the molar region being attributed to a cold, chronic catarrh, influenza or some kindred complaint.

Symptoms.—As just stated, the premonitory symptoms are frequently so mild in their manifestation as to cause no suspicion in the mind of the patient that a serious malady is lurking in the obscure recesses of the cranium. Such conditions may persist indefinitely without seriously inconveniencing the person or warranting the intervention of the specialist. Pain is by no means always present in the incipient stages, the first intimation of trouble being a noticeable quantity of muco-purulent matter upon the side affected when blowing the nose. This secretion may or may not be accompanied by a disagreeable odor, whose source the person may seek in his personal surroundings, quite unconscious that it originates in his own maxillary; a fact to which the writer can attest from personal experience. Again a taste as of rotten eggs is perceived in the throat, caused by fetid pus charged with sulphuretted hydrogen, dropping from the posterior nares into the pharynx. Yet headache or pain in the region of the antrum, is by no means infrequently the first intimation of local disturbance; this pain may extend toward the forehead following the ramifications of the trigeminus, incidentally causing conjunctivitis or other olfactory disturbances. The petuitary membrane of the nose is more or less inflamed by the purulent matter, whose acridity keeps up an inflammation of the entire nasal tract. In severe cases the teeth may be sensitive and apparently elongated by periosteal inflammation. One ever present indication is a sense of pressure, rarely amounting to pain, at the angle of the nose upon the side affected. In severe cases, as when the trouble is bi-lateral, the nasal passages are stopped during sleep by the abundance of the secretions. Breathing through the mouth unconsciously follows, then dryness of the throat and interruption of sleep, which can only again be induced after a careful disengagement of the air passages. In some advanced stages of the disease distension of the bone is observed, with perhaps occlusion of the natural orifice, excruciating pain and open fistulas in the mouth, from which ooze a never ceasing fountain of pus, leaving no doubt of antral empyema in an aggravated form.

Diagnosis.—The existence of empyema is not always easy to determine, though the presence of any of the preceding symptoms renders imperative a careful diagnosis of the case. The first duty of the dental surgeon is to carefully examine the mouth, especially upon the suspected side, to ascertain whether the infection could have obtained entrance through the root canals of a diseased tooth, or have been communicated by the inflamed dental ligament of teeth affected with pyorrhoea. Should a perfect dentition and the general healthy condition of the mouth eliminate any presumption of infection from that source, it is fair to assume that the disease is of inter-nasal origin and a consultation with a rhinologist is advisable. With the aid of a speculum pus may sometimes be readily seen oozing from the orifice of the sinus into the middle meatus. If matter reappears when the head is bowed forward, immediately after carefully cleansing the nose it can be considered as an almost certain indication that purulent engorgement of the antrum really exists. Many operators place great confidence in the electric light as a means of diagnosis, an undue opacity being considered as *prima facie* evidence of empyema; though so competent an authority as Lubet-Barbon admits that this can only be taken as corroborative evidence, inasmuch as the density of the bone, or the peculiar conformation of the maxillary may interfere with the translucence and give an entirely misleading impression. An infallible proof is, however, obtained by forming an artificial communication with the antrum; this can be made through the alveolus, or the canine fossa, though rhinologists usually prefer the inferior meatus owing to the thinness of the bony parietes and the comparative painlessness of the operation; in any case the appearance of pus leaves no doubt of the existence of disease.

Treatment.—Whenever the trouble is of buccal origin the services of a dental surgeon become indispensable, even though the responsibility of the treatment is assumed by a rhinologist. All suspected teeth and roots should be extracted without the slightest hesitation with the double aim of removing the exciting cause and establishing a communication with the diseased antrum. Meibomius, Sr., is reputed to have been the first to extract a tooth for this purpose.

Should the extraction be followed by a discharge of fetid pus, the next step is to determine whether the opening is sufficiently large and conveniently located for the proposed treatment. Usually it will be found necessary to enlarge the orifice. For this operation a square pointed perforator with a strong handle can be employed, but the electric dental engine with a trephine or a spear drill is much better adapted for the purpose. Ferguson, writing less than forty years ago, found nothing more convenient than a carpenter's gimlet for piercing the alveolus. In certain rare cases, as when the trouble arises from a third molar, it may be found desirable to allow the wound to heal, and if after a reasonable time the suppuration has not ceased, open at a more accessible point. Should no suitable vacancy exist, rather than sacrifice a sound tooth, the system of Dusault, of opening through the canine fossa, is by many considered to be the best course to follow. Once the communication is established the momentous question arises: "What treatment is it best to adopt?" Though purgatives, blood-letting and leeches are no longer employed in the treatment of antral disease there is still a great diversity of opinion upon the subject, even among those who make it their specialty.

While the dry treatment with iodoform or aristol has many partisans, others, for equally plausible reasons, prefer the long tried system of detersive irrigation. Nearly the entire list of astringents, escharotics and antiseptics contained in the pharmacopeia have in turn been employed for this purpose; in spite of this fact conservative practitioners have long sounded a note of warning against the danger of introducing irritating drugs into a cavity whose lining membrane is already in a state of violent inflammation. Tomes wrote in 1850, "After a free opening had been made the cavity should be washed out with tepid water." A little later Harris said, "The use of too stimulating injections should be carefully guarded against." Today the best known rhinologists recommend tepid water previously filtered and boiled. The two words "previously boiled" represent all the progress that two generations of medical research have made in the treatment of this disease. In practice boric acid or common salt are commonly added, owing to their non-irritating and slightly antiseptic properties. In cases where the trouble is incontestably of nasal origin direct interference should be made only when there remains no hope of spontaneous cure, and such hopes can be said to exist so long as there is no perceptible aggravation of the malady. If finally it is found necessary to obtain access to the antrum, an opening through the nose is generally preferable because of the readiness with which the bony septum can be pierced and the desire to avoid a possible introduction of micro-organisms peculiar to the mouth. Chief among these are the bacillus Ramosus petringens, thetoides, and staphylococcus which are found in dental caries and are the cause of the offensive odor arising from decayed teeth. Whereas on the contrary, those that are of nasal origin produce pus that is not fetid. The best known of these latter as the pneumococci, streptococci and staphylococci. This appears to give an explanation of the statement that the most fetid empyemas are by no means the most difficult to cure, the presence of fetor indicating a buccal origin, the cause of which has likely been removed with the decayed teeth. The perforation can be made with a trocar, a specially constructed trephine or the galvanic cautery. The difficulty of again finding the opening has always been a drawback to this method of treatment, but an ingenious device has recently been presented to the profession by Mr. Milsom, of Marseilles, which effectually obviates this difficulty. The instrument is merely a small rubber tube terminating in a pear-shaped head of metal, destined to be forced into the artificial opening and give a convenient means of washing out the cavity as long as may seem desirable. To apply it, a trocar with a metallic sheath or canula is first thrust into the antrum, then withdrawn, leaving only the canula, through which a wire is next passed, this being held in place firmly; the canula is withdrawn and the permanent tube is pushed over the wire until the opening is reached, when a little extra force will engage it in the hole. The wire is next carefully removed and the tube cut just sufficiently short to be perceivable externally, after which the projecting end is carefully concealed in the nasal fossa: it causes no discomfort to the patient and does not favor secondary infection, besides at the same time affording means for continuing the treatment in the absence of the operator. For washing the antrum Garel prefers the ordinary rubber suction pump as the pressure can be regulated at will and bubbles of air are readily made to mix with the water, producing a kind of ebulition which helps to drive the pus from the cavity. The ordinary Clyso-pump provided with a suitable canula is equally convenient for the purpose, though the oxydation of the metal and the disintegration of the rubber valve render it extremely difficult to prevent detached particles from occasionally appearing in the water. This difficulty can, however, be obviated by simply placing a piece of silk or other tissue over the larger end of the canula before adapting it to the rubber tube, thus forming a kind of filter which at the same time diminishes the otherwise too great pressure of the liquid.

Prognosis.—A prudent practitioner will be very reserved in pronouncing, with regard to the prognosis, as many cases yield readily to the most simple treatment whilst others apparently no more complicated are rebellious to all known resources of medical science; in fact the summing up can be no better expressed than in the words of Cartez, "Despite the various methods, and it may be added this diversity of practice is a proof of the difficulty in obtaining a satisfactory issue, one is not certain to quickly and permanently cure these abscesses even with the most approved medication and assiduous care. When undertaking the treatment, it is always best to be very reserved with regard to promising the patient an absolute and, above all, a speedy cure." If medicine has been baffled in its search for a panacea surgery has made such bold strides in the past quarter of a century that it now professes to be able to successfully treat the most obstinate cases of sinusitis. Though the curettage of the antrum is essentially a surgical operation, no article upon the diseases of that cavity would be complete without a brief allusion to the two most approved methods, known as the Caldwell Luc and Claoue operations. The latter operates by the nasal passages, after having effectually broken down the inner walls of the sinus. Caldwell operates through the canine fossa, by an opening at least three-eighths of an inch in diameter, but at the same time makes the communication with the nostrils as free as possible, for draining and subsequent treatment. Without pretending to contest the merits of these operations, the danger attending them is by no means inappreciable. First, the risk from chloroform should be taken into consideration, then loss of blood and danger of suffocation by excessive hemorrhage. Paralysis of the teeth is caused by lesion of the anterior dental nerve; by opening a way for infection to enter the circulation glandular swellings and septicemia become possible complications, but above all is the danger of provoking cerebro-spinal meningitis. Though admittedly successful in the majority of cases, these considerations should be carefully weighed before abandoning all hope of cure by less heroic measures, especially as it cannot be maintained that the curettage of the sinus is an absolute guarantee against future trouble.

REMOVAL OF THE RIGHT SUPERIOR MAXILLARY BONE FOR A GIANT CELL SARCOMA.*

BY TRUMAN W. BROPHY M. D., D. D. S., LL. D., CHICAGO.

I present to you this evening for your inspection, a patient upon whom I have operated for the removal of the right superior maxillary bone, which was involved in the development of a giant celled sarcoma. It is not my purpose to enter into detail on the pathology of the tumors of the oral cavity but to present to you some of the clinical aspects of myeloid or giant celled sarcoma, the point at which it usually has its origin and outline, and a conservative method of treatment. The sarcomata are divided into four classes, spindle cell, round cell, myeloid or giant cell and mellanotic. Of these the most benign are the giant celled growths. Not infrequently do these growths have origin in the antrum of Highmore, but the place of origin from which they most frequently develop is the sphenoidal fissure. Extending forward, the bone is often involved by the presence of these rapidly developing cells which act as do osteoclasts and cause an absorption of the osseous structure. The structure of the giant celled sarcoma is made up of large multi-nucleated cells of embryonic connective tissue. As I remarked at the outset this is the least malignant of all of the tumors of the sarcomatous group. Recognizing the pathology of these growths, familiar with their place of origin and the impression that they make upon surrounding tissues it may readily be seen that the tissues will be destroyed by contact with them as the growth increases in size. Usually from the point of origin the growth extends in the direction which affords the least resistance, which frequently leads to its extension forward. Ordinarily, if in the antrum it extends and fills the antrum and then as the nasal and distal walls are very thin, the growth involving these tissues finds its way into the nasal cavity destroying the bony septum between the antrum and the nose, then coming in contact with the nasal septum affects its destruction until the entire nasal passage, the hard palate and the opposite maxillary bone may become involved and destroyed.

---

*Read before the Odontological Society of Chicago, March, 1907.

The appearance of the tumor is only occasionally preceded by pain. The pain which comes as the tumor develops is due more to its pressure upon surrounding parts. One of the first signs is the swelling of the face over the antrum, and subsequently a pressure or complete obstruction of the nose on the affected side. Later the whole nasal passage will be involved and obstruction attended with a discharge of bloody fluid. The growth may extend upward involving the floor of the orbit and backward into the spheno-maxillary fossa. In the advanced stage the soft parts beneath the skin are destroyed and finally a breaking of the skin will leave a vast ulcer through which the fungous mass appears. Neighboring sinuses may be involved. The ethmoid cells, and often the base of the skull may be destroyed in the presence of these growths. The lymphatic glands rarely sympathize with this form of tumor. The destruction of life comes through the absorption of the bones from the base of the skull or by the general infection which it may bring on.

To treat a patient having a tumor of this character it is essential that the growth together with the tissues involved be thoroughly removed. In all the works of surgical technique and practice it has almost invariably been taught and adopted in operating to make external incisions in the removal of this and other tumors within the mouth, nose and pharynx, especially this calling for the removal of the maxillary bones. While in certain cases it is extremely difficult to operate in the mouth I am satisfied that in a large majority of such cases the patient may be saved unsightly scars by intra-oral operations.

REPORT OF THE CLINIC COMMITTEE.*

DR. C. N. THOMPSON, CHICAGO, SUPERVISOR.
DR. O. L. FRAZEE, SPRINGFIELD, ASSISTANT.

The following named persons, who had accepted appointments for clinics, failed to appear and sent no explanation or apology, either before the meeting or afterward. The supervisor of clinics and the editor of the "Transactions" are of the opinion that such conduct is a very serious omission of the duty required of professional gentlemen; as much so as if it were specifically condemned by the code of ethics.

---

*Read before the Illinois State Dental Society, May, 1907.

3. Dr. Harvey E. Harrison, Chicago. Extraction under nitrous oxide anaesthesia. 5. Dr. J. S. Bridges, Chicago. Local dentine obtundant. 14. Dr. L. H. Arnold, Chicago. Ailments of electric motors and furnaces. Their treatment and repair. 22. Dr. J. A. Bullard, Chicago. Impressions of the mouth. 28. Dr. B. D. Wikoff, Chicago. Hollow gold inlay. 30. Dr. R. W. Hood, Monmouth. Porcelain crown, using diatoric tooth. 32. Dr. F. M. Richardson, Chicago. Surgical removal of impacted lower third molars. Extended anaesthesia under nitrous oxide gas. 46. Dr. Edward Wall, Springfield. Rational method of securing accurate bite. 47. Dr. Lee K. Stewart, Chicago. Continuous gum. Dr. R. M. Pierce of Rock Island (No. 12), and Dr. W. T. Reeves of Chicago (No. 36), refused all the patients that were offered them.

WEDNESDAY MORNING.

CHAIR CLINICS.

1. Dr. T. L. Gilmer, Chicago. Surgical clinic. No patient could be found. 2. Dr. F. K. Ream, Chicago. Impacted molars. Nitrous oxide anaesthesia. Did not give clinic on account of illness.

4. **Dr. H. W. McMillan**, Roseville:

Diagnosis of obscure caries; co-operation of the patient. Chair and table clinic. Attention was called to the diagnostic value of tooth color, especially in the proximal surfaces of the teeth, believing that too many await development of more positive evidence of caries to the detriment of tooth tissue. The use of very fine curved explorers having short right angled points for proximal surfaces, and right angled points for occlusal pits and fissures. It is better to find cavities one year too soon than one year too late.

6. **Dr. E. F. Hazell**, Springfield:

Gold filling. Patient, Dr. F. H. Bowers of Freeport. The cavity involved the mesio-proximal and occlusal surfaces of the inferior left second molar. The filling was started and the first half built with unannealed gold, showing how perfectly and how much more easily it could be adapted to cervical margins and the floor of the cavity than could the cohesive gold in these locations. The remaining portion of the cavity was then filled with annealed gold.

The engine mallet and hand pressure were used throughout the operation.

7. **Dr. Lester F. Bryant**, Chicago:

Prophylaxis.—Used instruments and polishers designed by Dr. D. D. Smith. A successful and instructive clinic.

8. **Dr. John M. Evey**, Monmouth:

Porcelain inlay, restoring the mesio-incisal angle of a left superior central. The cavity was formed with chisels cutting away the incisal angle and labial margin parallel to the long axis of the tooth, rounding the labial margin at the cervical of cavity. The lingual of cavity was formed by use of smooth fissure burs in the right angle extending the middle and gingival thirds distally sufficient for retention; 1-1000 platinum foil was used for matrix, forming it over a stick approximating size and form of cavity and placed in cavity from the lingual, burnished to place with moist cotton and final burnish over celluloid strip. S. S. White's letter P was used for foundation body and Brewster's colors C. F. and A. were used as enamel. Inlay was etched with acid and set with Ames' pearl gray inlay cement.

9. **Dr. A. H. Peck**, Chicago:

Platinum and gold filling. No patient.

10. **Dr. J. E. Aigley**, Farmington:

Contour quick-setting amalgam filling, demonstrating the use of matrix. Nothing of importance was brought out except the fact that a matrix should always be used in putting in a contour filling of amalgam. The demonstration was not ideal as there was a large gold crown on the superior first molar and the cavity was a mesio-occlusal cavity in the superior second molar. The cavity was prepared and lined with cement; it was necessary to remove the dam at this stage to facilitate the adjustment of the matrix, consequently the filling had to be inserted without the dam. The result was apparently good and demonstrated the merits of the matrix.

11. **Dr. A. W. Starbuck**, Iowa City, Iowa:

Porcelain inlay. The case was a distal cavity in an upper right lateral. The cavity was formed with a smooth, square end, fissure bur in the right-angle. The lingual wall was entirely cut away so the matrix could be removed in that direction without separation. The labial wall was cut away and smoothed with a smooth fissure bur in straight hand piece. There was a flat seat under the labial wall.

The incisal and gingival walls were made parallel to each other and at right angles to the surface of the tooth. All margins were left sharp and at right angles to the surface. 1-1000 platinum foil was used for the matrix. This was first formed out of the mouth over an orange wood stick which had first been formed to approximate the shape of the cavity. Matrix was inserted from the lingual and pressed to place with a damp cotton pellet. It was then burnished to place with S. S. White's burnishers, No. 33 and No. 34. The final burnishing was done over a strip of rubber dam. S. S. White's high fusing porcelain, color P, was used for foundation body. Over this Brewster's high fusing porcelain, color C, was used in restoring the dentine. Brewster's, color T, was then used to restore the enamel. The inlay was etched with hydrofluoric acid. It was then cemented to place with Klewe & Co.'s inlay cement No. 8.

TABLE CLINICS

13. **Dr. Gustavus North**, Cedar Rapids, Iowa:

Replacing porcelain facings without removing bridge or crown. A quick method. This method for replacing porcelain facings has proven very satisfactory without removing the bridge or causing any discomfort to the patient. Drill holes through the gold backing for the pins of the new facing; counter sink the holes on both sides of the backing; cut the pins so they are just a trifle longer than the thickness of the backing; split the pins of the new facing with a thin ribbon saw half the distance of the thickness of the backing. The facing is now ready to fasten in place by using a little medium setting alloy. Place a little alloy around the pin holes on the side of the backing next to the facing and then press the facing firmly in place, holding it there until the operation is completed; take a hatchet shaped instrument and spread the split pins firmly, then burnish alloy in around the pins on the surface. After the alloy has sufficiently hardened, grind the lingual surface down to the original form, and we have a very sightly and durable piece of work. Alloy has been used for repairing bridges and crowns for many years, but generally in a bungling, unskilled manner. By the above method, reparing can be made as neat and strong as new work.

15. **Dr. J. K. Conroy**, Belleville:

Advantages of extension for prevention over non-extension. Clinic was made up of impressions and casts taken from mouths in which fillings had been placed from two to five years showing recurrence of decay where enamel margins had not been cut to allow self cleansing of filling. Clinic also showed several large plaster teeth with cavities prepared along lines laid down by Black method of cavity preparation.

16. **Dr. G. Walter Dittmar**, Chicago:

Presented a number of models of natural teeth, tooth dissections, carvings, measurements, drawings and gold shell crowns. He showed in particular the contour that a properly shaped artificial crown should have; i. e., the buccal and lingual convexity and slight gingival constriction which will protect the free margin of gum, and, in normal cases, prevent its recession. Also showed the anatomical markings of the different teeth and how beautifully they can be reproduced in making gold shell crowns by the seamless method. Also demonstrated in detail the technique of the seamless method, swaging from within out.

17. **Dr. W. B. Young**, Jacksonville:

Method of swaging an open-faced crown. Made the clinic but sent no report.

18. **Dr. Louis Ladewich**, Chicago:

Porcelain jacket crown. This clinic was intended to show, first, root preparation; second, burnishing of the platinum matrix, which was accomplished entirely by digital manipulation; third, the laying on of the porcelain, using pressure instead of jarring; fourth, completing the operation with one bake, using extra high fusing porcelain in pyrometer furnace. Gave clinic both days.

19. **Dr. Edward T. Evans**, Decatur:

Bridge work. Demonstrated the following: First. Use of banded loose pin porcelain crown for anterior abutment, showing method of grinding and swaging gold caps to extend from coping down distal surface to give greater surface for attaching intermediates. Second. Method of making accurate die and counter-die for swaging cusps for shell crown, after carving same in modeling compound, by making impressions of cusps in plaster of paris and pouring Ransom & Randolph Co.'s "Fusalloy" into this impression; making counter-die of same, preventing sticking by smoking face of die with ignited pitch pine stick. Third. Method of carving cusps of porcelain faced intermediates in modeling compound and swaging all together, using same method as for swaging crown cusps, assembled facings and cusps by placing modeling compound cusps with facings attached in swaged piece of gold to invest and solder.

20. Dr. W. S. Wallace, Sparta:

Gold inlay for fractured incisor. This method may be used where the incisal edge is broken off, or where the lingual surface has been cut away by opposing teeth. First grind incisal edge and lingual surface to allow for plenty of gold for occlusal wear. Next cut two dove-tail cavities in the incisal edge; the same appearing on lingual surface as V-shaped openings. Next drill a pit in the lingual fossa. After the retaining points have been properly prepared, the inlay will have to go on from the end and no amount of stress will unseat it. Now take pure gold, forty gauge, and burnish over the lingual and incisal edge; take a gold plugger and punch holes through the backing into the pit and dove tail cavities and pack gold foil into these; this will give you gold foil pins instead of soldered platinum and a much better adaptation. After packing the gold foil you can complete your adaptation of the backing to the tooth without any danger of it moving. After thoroughly burnishing, remove backing, coat under side with whiting to keep solder from flowing through. Cut strips of twenty-two karat solder the size of incisal edge and sweat them on the backing, one at a time, until the cusp is the proper length. Place eighteen or twenty karat solder on lingual surface and flow until you get the proper occlusion. Place backing on the tooth occasionally during the soldering and burnish so that your backing may be in perfect adaptation to your tooth, finish and set. Where the fracture is so extensive as to destroy the pulp, I use a step anchorage with iridio-platinum pins in root canal. The method may be used as an abutment for bridge.

23. Dr. T. W. Pritchett, Whitehall:

Use of cement in starting gold foil fillings. The purpose of the clinic is to demonstrate the application of cement under metal fillings as advocated by Dr. C. C. Corbett of Edwardsville, who was probably the first one to clinically exhibit it to the Illinois State Dental Society. The salient features advocated are, the option of using it in small or relatively large quantities in accordance with the requeriments of the case; soft and sticky in some cases, and in others it may be allowed to harden; it may be used soft as an aid in controlling the gold in fillings of any size; it may be so used as to practically make an inlay of the major part of the filling in many cases;

it may especially be used in proximity to the pulp, independent or in combination with the other walls of the cavity. In a word, its use will grow upon one if painstakingly used in the beginning.

24. **Dr. C. P. Pruyn**, Chicago:

Study of amalgam. Filling glass tubes to show how difficult it is to make perfect fillings. Clinic consisted in having any one who wished endeavor to absolutely condense amalgam in a short glass tube having a sealed bottom. The sides of the tube being covered until after the filling was inserted, when it was removed and the filling examined through a magnifying glass through the glass sides of the tube to determine as to the density of the filling. Many tried it more or less successfully. It is the opinion of the clinic committee that all who tried it returned home with a more definite idea as to what was necessary to make a perfect filling than they had before the clinic.

25. **Dr. C. B. Sawyer**, Jacksonville:

Demonstration of the use of spence metal. Demonstration consisted in making dies and counter-dies and swaging, showing fineness of detail and the advantages of its low fusibility.

26. **Dr. H. N. Orr**, Chicago:

A method of obtaining an accurate model in Melotte's metal. Impression is taken of cavity in base-plate gutta-percha, which is invested in plaster. When set, all over-hang is cut away to allow of ready separation. When impression is invested, it is carbonized over gum camphor, a mouth blow-pipe may be used to blow the carbon into the fine points and deep parts of the impression. A rubber ring is then placed over it, and Melotte's metal is poured in quite hot and gently jarred down. Upon separation it will be found that the carbon has produced a surface over which the Melotte's metal has run to all the fine parts of the impression.

27. **Dr. B. Newsome**, Minonk:

Some methods useful to me. This clinic consisted of methods of adjusting the parts of a broken vulcanite plate, of plaster models and dislodged abutments in bridge work to their proper places and retaining them there. Place some hard, sticky wax on each part or piece a short distance from the fractured edge; adjust the parts to their proper positions, warm a piece of strong wire and place the same from wax on one fragment to wax an adjoining fragment and hold until cool. In this way no wax gets between the parts as it does when the wax is placed over the fracture. Teeth for bridge work can be easily placed to position, after they are ground to fit, by waxing the wire to lingual of the abutments and waxing the teeth to the wire.

29. **Dr. W. O. Fellman**, Chicago:

Lingual concealed abutment attachments for anterior bridges. Preparation of incisors and cuspids is as follows: Mesial and distal surfaces are disced off flat and lingual is ground enough to get space for sufficient thickness of the attachment. Then a groove is cut with a fissure bur on mesial and distal surfaces in long axis of tooth. These two grooves are connected near incisal edge with a transverse groove. An impression is then taken with gutta-percha. The tooth must be prepared so the impression will draw from the tooth perfectly; make a model with Melotte's metal and burnish matrix and stiffen with twenty-two gauge iridio-platinum wire tacked with twenty-two karat solder.

Bicuspids differ only in the fact that the lingual cusp is cut off and replaced in the inlay attachment. Molars are prepared by discing the mesial surface from below gum line, sloping toward the occlusal; mesio-lingual and mesio-buccal cusps are cut off and groove cut, bucco-occluso-lingually with a knife edged stone. The bulge on buccal and lingual to the groove is ground off so impression will pull off and matrix will fit perfectly. Matrix is stiffened with the wire and cusps are restored with Keeton-Williams gold and solder. This makes a strong inlay abutment with margins of inlay in immune areas.

FRIDAY.

CHAIR CLINICS.

33. **Dr. W. H. De Ford**, Des Moines, Iowa:

A lesson in administering somnoform. Gave a very instructive talk on the advantages and use of somnoform in dental operations. In speaking of the preparation of the patient, he insisted that the clothing should be loose and in the case of women the corset must be removed. This insures a quick and a more agreeable anesthesia and decreases nausea. He described the method he employed in administering somnoform to the young, the aged, the anaemic, the plethoric, the alcoholic. Several dentists present voluntarily took the anesthetic to study the effect ahd action of somnoform personally. The doctor recommended this anesthetic for all operations on the teeth, such as preparation of cavities, removing pulps, etc., showing practically at what stage of the anesthesia these operations could be performed.

34. Dr. G. H. Kopperl, Jacksonville:

Porcelain inlay. Buccal cavity in inferior left second molar. Cavity formation consisted in preparing the side walls at right angles to the surface of the tooth that the outline of the cavity intersected, leaving sharp margins. Platinum foil 1-1000 inch thick was used and burnished with ball burnishers; swaged to cavity with camphor gum. High fusing porcelain was used, foundation for the base and lower fusing for the enamel.

35. Dr. Edmund Noyes, Chicago:

Gold foil filling. The cavity was a disto-occlusal in a right lower second bicuspid with insufficient space, which greatly prolonged the time of the operation and made it necessary to build gold as close as possible to the molar, and after finishing the rest of the filling as nearly as practicable, it was left to be wedged for finishing the contact point subsequently. Before the operation was finished, the patient, Dr. W. A. Johnston of Peoria, was elected president, and the moment the rubber dam could be removed, he was hurried into the session of the society to be inaugurated, without waiting for coat, collar or necktie.

37. Dr. E. H. Hickman, Arcola:

Contour amalgam filling, using matrix. Made the clinic but sent no report.

38. Dr. Austin F. James, Chicago:

Treatment of pyorrhea alveolaris and prophylaxis. The points of the clinic were the demonstration of the planing principle in instruments, using the tooth as a fulcrum, gauging the depth of your cut and acting as a guide for the instrument in removing deposits in pyorrhea and smoothing the gingival margins of enamel in prophylaxis. Also that the planing principle or the use of an instrument which touches or bears on the tooth posterior to the cutting edge greatly lessens the pain in the removal of deposits on sensitive teeth. The clinician also advocated the use of 20 per cent argyrol in pus pockets after having removed deposits and washed out pockets with warm carbolized water. Use argyrol freely, flushing the pockets thoroughly.

39. Dr. Fred W. Parker, Chicago:

Solid gold inlay without investment, showing patient and model. The cavity to be filled was a very large bucco-occlusal one in a lower left third molar. The pulp had been extirpated and the pulp chamber was filled with cement.

An impression of the cavity was made with modeling compound in the usual manner and an amalgam model made from the impression served for the purpose of making the matrix, thirty-six gauge, twenty-four karat gold being used. The matrix was then placed in the cavity, carefully burnished to place and gold cylinders were packed firmly into the matrix in the cavity until the cavity was about half filled, when the matrix was removed and twenty-two karat solder was melted over the foil by holding the matrix in a Bunsen flame. The matrix was then replaced in the cavity, burnished again and a bite impression taken with modeling compound. The impression was run up with plaster, with the matrix in place in the impression and placed on an articulating frame and separated. A piece of modeling compound was softened in the flame and pressed into the matrix and the articulating frame was closed. When the compound had cooled, it was carved to the proper contour and occlusion. The plaster tooth containing the matrix was cut from the rest of the model and placed in plaster in a ring of a swaging device so placed that a cover, so to speak, could be swaged for the matrix. When the plaster in the ring had hardened, a piece of twenty-four karat, thirty-six gauge gold was placed over the modeling compound and swaged very thoroughly to place, after which it was trimmed. At this stage the gingival two-fifths of the buccal side of this swaged cover was cut away that an opening might be secured through which the subsequent soldering could be done. After swaging again, the plaster and compound were cleaned from the matrix, the matrix placed in the tooth in the mouth and the cover put to place and the patient was instructed to bite down to ascertain whether or not the correct relations existed. Then the matrix and cover were held firmly in their correct relation and soldered in the Bunsen flame, without any investment, the pieces of solder necessary being introduced at the opening made by cutting away the gingical portion of the buccal wall of the cover, as mentioned above. The soldering was continued until the interior was full flush with the opening. Flux was used on those surfaces on which the solder was to flow and anti-flux on the other surfaces. After the soldering was completed, the inlay was finished and polished with stones and discs and cemented to place.

This operation was, I believe, the very best thing for the case, because of the difficulty of access and the extensive destruction of tooth structure. To have made a filling of gold foil would have been a physical impossibility. To have placed a matrix for an amalgam would have been extremely difficult on account of the close proximity of the cheek, and because the gingival margin of the cavity lay just at the line of attachment of the tooth and peridental membrane. A crown was avoided and a very desirable and permanent repair was made.

40. **Dr. Donald M. Gallie**, Chicago:

Gold filling. Mesio-occlusial cavity in right inferior first molar. Margins and walls were extended so as to give convenience and retentive form to cavity. Filling started with soft gold, finished with cohesive cylinders and heavy foil. When finished there was perfect restoration of interproximal space, mesio-distal diameter of tooth and contact.

42. **Dr. Louis E. Bake**, Chicago:

Porcelain inlay. Distal cavity in lateral incisor fitted with high fusing porcelain, and models showing cavity formation and method of laying on colors.

TABLE CLINICS

43. **Dr. W. H. Taggart**, Chicago:

Cast gold inlay. The most interesting of the clinics. Dr. Taggart also illustrated his methods at one of the sessions of the society, but he has not written out any report.

44. **Dr. M. R. Harned**, Rockford:

Sure method of securing accurate fit of cope for porcelain shell crown. Having prepared tooth with shoulder slightly beneath gum margin, fit loosely a band at neck of tooth gingivally from shoulder; cut platinum foil 1-1000, length of band and sufficiently wide to be sure to lap well over top of tooth and extend under gum; roll up and slip within band and turn the edge over edge of band to go under gum; slip on to tooth. This will hold margin of platinum safely above shoulder; crimp platinum in to tooth and slip small rubber ring (cut from tubing) between band and platinum, shove firmly down to shoulder; burnish platinum over end of tooth, remove rubber ring and band and burnish any particular places you desire to touch up.

48. Dr. C. B. Powell, Jacksonville:

Porcelain jacket crown. Demonstrating porcelain jacket crown showing that it is not necessary to extend preparation to the gingival margin on the lingual surface of the tooth. The advantage of which is that the pulp-canal could be opened for treatment if necessary without jeopardizing the crown.

49. Dr. C. M. Baldwin, Chicago:

Aschers' enamel cements. This clinic demonstrated Aschers' artificial enamel, also the clinician's set of instruments for working the same and how to make them. Cavities should be generally retentive in form and the margins square, as a rule. To secure good results, it is very necessary to have a proper mix, which should be applied to walls and margins while the mass is thoroughly adhesive. A gelatine matrix cut from a medicine capsule is used when filling most compound proximal cavities, reinforced with tightly packed cotton in the gingival space, and with modeling compound if a buccal or lingual wall is also to be restored.

51. Dr. Dean R. Phillips, Chicago:

Anterior bridge, concealed attachments, two-tooth effect in three-quarter space. The bridge shown was the upper left first and second bicuspids. First molar having moved mesially, space for one and one-half teeth remained. The attachments were a Carmichael on the cuspid and large, well-seated inlay in first molar, between which was constructed an ingenious saddle to hold a block section; the block section was ground to restore lost gum tissue and by shortening entirely from the distal, gave the appearance of two full teeth. The gold work of the bridge was first cemented to the teeth, after which the block was cemented into the carefully prepared portion on the saddle. The distal half of the second bicuspid being ordinarily hid from the line of vision, makes it the logical part to take away when space is too small.

52. Dr. F. W. Gethro, Chicago:

Cavity formations for gold fillings: Clinic was given, but cannot be well described without illustration, so no report is made.

54. Dr. F. B. Noyes, Chicago:

Correct cavities for gold inlays, natural teeth. Clinic was given, but cannot be well described without illustrations, so no report is made.

55. **Dr. F. E. Roach**, Chicago:

Pontoon bridgework. In supplying partial dentures with the pontoon bridgework, the minimum destruction of the remaining teeth is incurred in construction, and the injuries to their lingual surfaces and the adjacent gum tissue caused by the impingement of plates is eliminated. Especial attention was given to supplying the lower molars and bicuspids by means of a round wire connecting the saddle on each side.

57. **Dr. Geo. W. Haskins**, Chicago:

Removable dentures, using tube and split pins. Seemed to interest the few rather than all, but those who were interested were so from a feeling of the need of something better than the clasp attachment on partial and full lower dentures without anything to keep them in place but gravity. The clinician emphasized the point that in either full or partial cases, the denture was not retained in place by the roots, but by the slight friction of the teeth and pin on the telescoping bands, holding the plate on the ridge, thus preventing movement laterally.

58. **Dr. F. H. Skinner**, Chicago:

Gold inlay. Assuming that cavity is prepared, an impression is taken in modeling compound, using dry heat to soften same, so that just the end of modeling compound cone is soft, the center of cone forming a hard core, which forces the softened point into every detail of cavity. Chill with cold water and remove. In approximal cavities a matrix of about thirty-gauge German silver is used, cut in width to extend from the gingival to the occlusal surface of the tooth. Articulating and contouring bites are then taken and poured up in plaster. Impression is invested in plaster so that just the cavity portion shows and all parts which would be liable to prevent getting a good model are cut away, surface dusted over with talcum powder, and cement mixed to putty consistency forced into impression. This requires the help of an assistant. When set, separate, and a perfect reproduction of cavity in cement is the results; this is set in a Brewster inlay swaging cup with plaster. When hard, the matrix is swaged, using the Brewster inlay swager; matrix is made of platinum, 1/1,000, or pure gold, thirty-six to forty gauge. I think I have had a little better result using platinum, although I cannot understand why. A piece of warm modeling compound is then forced into the bite, cusps carved as indicated for articulation, and forced into Mellottes' moldine, and a metal die run up, and cusps or cover of inlay swaged of twenty-two karat gold, thirty-six gauge, and trimmed to cavity margins. If lines are accurately carried out, this cover will fit over swaged matrix in cement model, leaving the approximal surface open. Wax cover and matrix together, invest and through approximal opening flow twenty-two karat solder, filling to full contour. Grind approximal surface as indicated by placing in contouring bite previously spoken of. File or disk off overlap as indicated by placing in cement model, and polish. If care is taken, it is very seldom necessary to do any grinding, finishing or polishing after inlay is set, although I usually go over the margins of any metal inlay with burnishers after setting.

60. Dr. J. W. Ritter, Charleston:

Selected. Clinic was given but no report sent in.

62. Dr. G. H. Henderson, Springfield:

Swaging a plate, using the Olivian plate swage. The feature of this process of swaging metal base for plates is that the die metal fuses below the boiling point of water and consequently can be poured into a fresh plaster impression, thus saving time and securing an exact reproduction of the mouth in metal. This metal is said not to shrink in cooling. The practice of scraping impression as followed heretofore applies to this method. The process consists of imbedding the base of the die in modeling compound in the lower half of a heavy metal box. The upper half being filled with some semi-plastic substance, such as unvulcanized rubber, gutta-percha, etc., the plate is roughly approximated to the die, then covered with rubber dam to prevent the counter die material from sticking; then the two parts of the metal box, the one containing the die with plate, the other containing the plastic material, are strongly clamped together over the plate and exposed to the hydraulic action, so to speak, of the small punch that is forced upon the plastic interior of the box through a three-quarter inch hole in the top for that purpose, exerting a pressure of several tons. The advantages of this method are that the die is made direct from the impression, thus favoring accuracy and saving time and work. If there are extensive undercuts, the die can be melted from the inside of the plate after it is swaged. It is the experience of the Clinic Committee that this method is a valuable adjunct in making plates from dies to be used to give the final set, but that it is not strong enough to absolutely swage the entire plate.

63. **Dr. A. C. Hewitt**, Chicago:

Amberoid cement. The powder chosen for the body for cements consists of granules, transformed from mineral oxides to aggregations of carbon-like, diamond-like hardness and insolubility in any menstruum, and absolutely so in oral fluids. These granules are crystaloid, drawn together in regular geometric shapes and held thus as the result of calcination in intense heat (2,800° Fahr. continued for ten consecutive days). No powder of lower calcination is used. To mitigate the toxic influence of phosphoric acid and to bar oral fluids from the said crystals constituting the "setting-bond" the author of amberoid cement interposes amber, and amberoid resin with the "cement liquid" and by so doing he renders the cement non-toxic and so nearly moisture-proof that oral fluids cannot dissolve the cement.

ILLINOIS STATE DENTAL SOCIETY, QUINCY, MAY 14-17, 1907.

DISCUSSION OF DR. CORBETT'S PAPER, "THE ADVANTAGES OF CEMENT AS A CAVITY LINING."

Dr. C. B. Rohland, Alton:

Dr. Corbett has given us a most excellent paper. I consider it both timely and important in that it advocated a method of practice that has not received as much attention or been as generally adopted as its merit would seem to entitle it to. The points are well taken, the positions assumed are logical, and in my judgment, which is based on many years' observation and experience, the practice advocated is correct. Of course, the idea is not a new one. Neither is it of comparatively recent origin. There is evidence in dental literature that it was advocated and practiced here and there, for the past thirty or forty years—possibly longer. Even before the introduction of the phosphate cements, when the only cements at the command of the dentist were the oxychlorides, commonly known as bone fillings, the idea of interposing a layer between the metal and the walls of the cavity were suggested, and for nearly the same reasons as advocated by Dr. Corbett here today.

One of the earliest suggestions in this line that has come to my notice, was brought out in a paper entitled "Combination and Therapeutic Action of Some Filling Materials," read by Dr. D. D. Smith of Philadelphia before the American Dental Association in August, 1878. Of course, the central and most important idea of the paper was to draw attention to the therapeutic value of the oxychloride of zinc in deep cavities, with softened dentine lying over the nearly exposed pulp, and to illustrate, a case was cited in which he had used the cement in just such a cavity, and covered this with gold, ten years before, which would bring the date of this case to 1868, nearly forty years ago. This filling he had occasion to remove shortly before, although still intact, in order to get at another place. The perfect condition of the now hardened and apparently healthy dentine found under this cement had so impressed him with the therapeutic value of this practice that he thought it of enough importance to bring it before the Association. But he also distinctly enumerates as among the other advantages to be derived, a more perfect adaptation of filling to walls of cavity, the prevention of leaky margins, the prevention of discoloration of the tooth, and the more secure anchorage of metal fillings.

Occasional allusions to favorable experiences with cement in combination with other filling materials, appeared at intervals, showing that the idea had not been lost until, in 1891, in a report made to the American Dental Association on Operative Dentistry, the practice of using cement to assist in securing anchorage in frail teeth is spoken of as having been recently introduced and received favorable mention.

Dr. J. Foster Flagg, also in a paper on "Composite Fillings" read before the Midwinter Fair Dental Congress at Tacoma in 1894, claimed to have very early suggested the lining of cavities in very soft teeth with cement, and to have practiced this line of work for nearly twenty years. The combination of zinc phosphate with amalgam he claimed, with a record of eleven years' constant practice behind it to prove it, to be a reliable advance in operative dentistry.

Now, although all this proves that others have thought of this before, it has never become a generally accepted method of practice, simply because it happened not to strike root. Nevertheless, we are indebted to Dr. Corbett for again calling attention to the practice, and for introducing perhaps better and more perfect methods of manipulation.

I remember very well that the suggestion did not appeal to me for a long time with sufficient force to make me adopt it as a regular feature of my practice. I would see the suggestions, for I was a close reader of current professional literature, and I would in sporadic cases try it. But the idea never took root with me, until I began to experiment with the inlay idea, and began to see the rather unexpected durability of cement in some of the inlays I had put in from time to time in a tentative sort of way. Then it occurred to me, if cement retained loose inlays in place, and prevented decay, why would it not improve the adaptation and retention of all fillings?

I would only be practically making inlays of all purely contact fillings. Certainly, the adhesion of a gold filling –I said to myself—must be improved with a sticky layer of smooth cement. A filling that depended on close contact alone to exclude moisture, no matter how well or skillfully adapted, I argued, must be made still safer and any errors of adaptation more likely to be entirely eliminated with a layer of cement. Without cement the inlay would be a total failure as a stopping. It would be no better than a loose filling—absolutely no protection at all. With cement it takes at once front rank as a tooth saver. If its use is so effective there, why will it not be just as effective as an auxiliary under all fillings? So by the time Dr. Corbett gave his clinic before the State Society I was present, and was fully prepared to accept his claims for the practice, and it soon became an integral part of my method of filling teeth. So much so, that I believe fully 90 per cent of all fillings in my office for years have been placed over a lining of cement. Even gutta percha if intended to remain indefinitely is cemented into place, and my experience with the practice justifies my opinion that it is a most valuable auxiliary in nearly all cavities.

Dr. Corbett has ably brought out the advantages secured by interposing a layer of cement between all other filling materials and the walls of the cavity, and I do not know that I can add thereto. I can only say that my experience and judgment seem to bear him out in his claims. In my judgment, not the least of those advantages lies in the protection afforded the pulp from the irritating shock of thermal changes, due to the contact of a large mass of metal against sensitive dentine. Those who have had personal experience in their own mouths of the discomfort and annoyance from this source will appreciate the importance of any method that promises to even only partially mitigate this trouble. For years I suffered this annoyance from a couple of molars that had been filled with gold. Every hot or cold drink I took had to be carefully guided down the middle of the road—every excursion to the side was followed by shock. In time, I lost the teeth. Now, had a layer of cement been interposed between filling and pulp, I am satisfied the chances are these molars would still be in commission, and earning their living as well as mine.

Now, one more point I should like to touch upon, if you will indulge me—and that is, the additional resistance secured to the filling against the forces of occlusion tending to dislodge it.

For fillings with a layer of cement under them actually do stick, and with a tenacity sometimes that is surprising.

Certainly no wise operator will depend solely on cement for retention. No wise operator will throw away any advantages that may be at his command, to make his work stand. Every practitioner has had case after case where he would almost give his soul for the chance of driving in just one or two more nails to make him feel just a little more secure and comfortable about the "retention of that filling." Now, the cement is just that longed-for "additional nail or two." That this adhesion of filling to cavity wall is a substantial reality, and not a mere dream has been fully demonstrated time and again by experience. Not very long ago, it was my privilege to see some work in the mouth of a former patient of mine, which demonstrated the strength of cement adhesion in a most surprising, as well as convincing, way.

I wish I could say the fillings were mine, for they were most beautifully done, and their standing where they did ten years of constant use without a sign of yielding, was testimony to the skill and judgment of the operator as well as the soundness of the theory on which they were founded. They were the work of Dr. Corbett, put in after the methods advocated in his paper. I will not attempt a description of just how the cavities were prepared and how little there was in the way of retaining pits and grooves to hold the fillings in place. Dr. Corbett will doubtless before closing explain that to your satisfaction. Suffice it to say, that the gold was built up on the conical stumps of the four lower incisors in a denture with but few molars remaining, that the pulps were all alive, that retention could therefore only depend on shallow grooves on either side of the small stumps remaining, that the teeth met squarely, and by reason of loss of molars were compelled to bear the brunt of mastication, and that any dentist of experience examining them, and knowing how they were placed, would have felt very dubious as to the ability of the slight anchorage alone to withstand the stress. With the help of the cement, however, they did withstand the stress and stood up to the demands of nearly ten years' constant use, and, as far as visible evidence could go, they were good for twice ten more. It is barely possible they might have stood without the cement, but not probable. The cement seemed to be just the "additional nail or two" required to hold them in place. There were other excellent points brought out by Dr. Corbett, but they will doubtless be touched upon by others.

Dr. A. M. Harrison, Rockford:

Dr. B. F. Ells of Rockford found that he could not be present at the meeting and asked me to take his place in the discussion of Dr. Corbett's paper.

My attention was first called to cement lining or cement anchorage about eight years ago by Dr. J. J. Reed, now of Beloit, Wisconsin. He was and is still enthusiastic on this subject. At his suggestion, I tried the method. At first the results were not entirely satisfactory, for I attempted to use too much cement. In very large cavities much cement may be indicated, but it is better to insert whatever is necessary for filling deep undercuts, or for protecting the pulp if already exposed, by using a thin mix and allowing it time to set, then mix another smaller amount to be used as lining for filling, and into this the metal filling may be condensed without fear of disturbing the base or injuring the pulp. A wire with the end bent into a hook makes an excellent instrument for carrying the small amount of soft cement and leaving it just where it is desired, thus avoiding the "sloppy results," as some who did not approve of cement linings have termed them.

I quite agree with the essayist: First, that a cement lining does seal the cavity more completely than is possible where the metals alone are used, even by the most expert operators. Second, that it saves time in large gold fillings. In my hands, I find that for small gold fillings and all sizes of amalgam fillings this method requires more time even with my assistant mixing cement as well as amalgam. But that is a small matter, and I believe we are rendering a more valuable service to our patient, for the tooth will last longer and stay in better condition. Third, it helps to anchor the metal filling. I should not depend upon the cement alone for anchorage when I can just as well have that in the form of the cavity. The assayist used the illustration of cement anchorage holding the porcelain filling. I think we have all been agreeably surprised to note the strength in such cases, but do we not seek to lock the porcelain inlay as much as possible by cavity formation? Fourth, that it is a non-conductor of thermal changes, a very valuable asset to large metal fillings. Personally, I have lost the pulps of three teeth where I believe if cement linings had been used these pulps would be alive and normal today. Fifth, that it strengthens the walls. Porcelain inlay workers have noted and commented upon this fact. Sixth, that it prevents the discoloration of the dentine and enamel walls when the entire cavity is lined. How often we see sets of variegated teeth where from the cuspid to the third molar we have every shade from the delicate suggestion of blue to the "black hat tint," with the latter shade predominating. I have had little experence with cement lining under amalgam fillings in temporary teeth, but I shall practice that more after having the hearty commendation by the essayist for this class of fillings.

I have heard it stated in our Northern Illinois Dental Society that the cement lining would prevent the change of form of amalgam fillings at the margins and the points of contact with the walls of the cavity. I think I should prefer, however, to use an alloy that was supposed to have the minimum amount of shrinkage and expansion. "The best is none too good."

I do not agree with that part of the quotation from Dr. J. P. Root, when, after advising care of all margins, he adds: "But suppose you did crowd cement over the margin it will not probably be more than that used in an ihlay, and we know in such cases the cement stands." That probable amount might cause the failure of the filling and doubtless has discouraged many who have tried the method. Use a quick setting cement and give it time to set before filling over the margin. In gold fillings, be sure that the margins are clear. For a long time I used cement lining only for large amalgam fillings, but I have learned to have confidence in it for gold as well as amalgam. I do not use cement under every filling as does Dr. Corbett; possibly I shall after having used it as long as he has, for I find I use it more each year. The habit seems to be growing upon me.

At a meeting of the Odontological Society of Rockford three and a half years ago, Dr. W. V.-B. Ames told us how to secure a lining surface to the porcelain inlay so there would be cohesion between the inlay and the cement. As this is germane to our subject, I take the liberty of mentioning it. Take sixty parts by weight of coarse zinc silicate, i. e., before it is ground fine as we have it in our cement powder, and forty parts of the regular foundation body used for porcelain fillings, mix thoroughly, then coat the inner surface of the inlay matrix with some of this mixed body quite moist. Do not jar it to place as you ordinarily would, for that would cause the coarser grains of the zinc silicate to come to the top and the fine foundation body would settle next to the matrix, and we should prefer the reverse as nearly as possible. Place in furnace, but do not fuse it thoroughly at this baking; then add more of the foundation body and proceed as for any other inlay.

If, upon removing the matrix from the finished inlay, you find the base has a slight glaze at any point, it may be scratched with a pointed instrument and you will find the granules of the zinc silicate just underneath the thin glaze. This gives the inlay not only a roughened surface to which the cement will cling, but I think there is also an actual cohesion, a chemical union of the zinc silicate of the lining and the cement, just as there is of the cement powder and liquid. During the past three and a half years I have not had an inlay made according to this method come out where the cement separated from this lining. I certainly could not claim as good results when I used hydrofluoric acid for etching the base of inlays. I hope the inlay workers will try it, for I believe they will be pleased with the results. I have some samples I should be glad to show any one interested.

Dr. J. M. Barcus, Carlinville:

I read the paper before it was presented here, and it occurred to me that the value of a thing depends lergely on the man who uses it. Those of us who know Dr. Corbett will take at its face value whatever he says.

This paper seems to have two broad headings, namely, the prevention of recurrence of decay, and the aid in the retention of fillings, both of which have been discussed, and both of which are valuable. I have not used this method as long as Dr. Corbett, but I have used it to my satisfaction in every case. I cannot use it quite so well as he does because of my adherence to the use of noncohesive gold at the gingival margins of cavities. I cannot give that up, and I do not know just how to get a sticky cement there without disturbing my noncohesive gold. I do not know very well whether to put cement in there and pack it down to the bottom of the cavity, and put noncohesive gold over it at the cervical margin, or whether to reverse it. I have tried both ways. In scientific cavity preparation we have used, in proximal cavities in centrals, for instance, a little pit cut toward the occlusal or incisal edge; but I tell you, gentlemen, if you put a little cement in there, and then use a little pellet and work it down there, you are sure you have a perfect adaptation, and I do not know how you can be sure of that without it. I know good gold fillings have been made and will be made without this cement, but they will be made oftener and better with it. Dr. Corbett knows what the rest of us know, that the road to attainment of any sort has never traveled in the easy chair. This cement will not make it easy for people to practice dentistry; but it will aid them.

Dr. G. W. Dittmar, Chicago:

Cement as a lining has its place. For instance, it is indicated in deciduous teeth and in cavities that should be lined with cement in order to keep gold or amalgam from showing through thin walls. Also, to protect pulps from thermal irritation. It is more or less inconsistent to use cement to make an absolutely moisture-tight filling. Practically all of the speakers made the point clear that the cement must be removed from the margins of the cavity. Yet they contend that it takes cement to make a moisture-tight filling; why, then, remove it from the margins? That is just exactly the place where the moisture must be kept out. It is all right to use cement to help retain a filling in a tooth; it is adhesive. But do not depend upon cement to make a moisture-tight filling, because it will not do it. Dr. Black, Dr. Poundstone and others have demonstrated that it will not keep moisture out. It is porous. Dr. Corbett and a few others undoubtedly use this method very successfully. But I wish to emphasize that it is a method which will make the average dentist a slovenly operator, and for that reason I condemn it.

Dr. A. C. Hewitt, Chicago:

We are told that phosphoric acid applied to a pulp will kill it, hence a great many dentists say that before you put on a shell crown or a bridge you must devitalize that tooth. Phosphoric acid is a virulent poison. How near can we place cement to a pulp and not devitalize it within one, two, three, or five years?

Dr. T. W. Pritchett, Whitehall:

I well remember the clinic Dr. Corbett made in 1897. I stayed with him to its completion. I wanted to see, and I did see.

On the first introduction of oxyphosphate cement, it soon became a common practice to place cement in deep cavities for better protection of the pulp, and for filling up the pulp chamber when pulpless, and similar uses; but in most cases the cement was allowed to harden before the application of a metal. The idea was not so much to assist anchorage, but to modify the form of the cavity. As we remember the Doctor's argument in 1897, his method would frequently obviate cutting away of much strengthening dentine at the base or gingival, and the incisal portions of proximal cavities in the anterior teeth, provided the cavity was cleared of all carious dentine and given a generally retentive shape after the manner of undercuts and curves, rather than square angles or deep retaining pits. And by using adhesive cement as a starter for holding the gold in position while massing enough of it at the two ends of the cavity to meet in the middle, the continuation of the filling could be made with safety. Not so much lining the cavity as an inlay, but saving of strengthening dentine, a saving of some pain to the patient in deeper excavation, a control of the gold until a sufficient mass can be aggregated from all points of the cavity to insure stability while the structure is being completed and to insure its stability after completion.

These were the main points then urged by the essayist, as they are written upon the tablets of our memory. Your doubting Thomas had his doubts, like the man from Chicago, as to the stability of that filling. It looked sloppy, it looked smeary, it looked unsafe; but the builder was building better than we knew, and we rejoice to hear that the filling is in evidence today to testify to the operator's skill and judgment.

It was a clinic that brought this method before our society, and it has been leavening out practice ever since, as the writer well states. It was a clinical demonstration by Dr. McKellops that taught this society how to fill root canals with chloro-percha and with the addition of the gutta percha point is of world wide practice today. It was an upper molar tooth filled in a patient's mouth by Dr. McKellops, which for some reason was soon afterward extracted, the sides of the roots ground away, exposing to view three slender root canals, beautifully filled from end to end with Chloro-percha, and it was passed from hand to hand until every one had seen it. A mere inspection of that silent witness was enough to convince the most skeptical of its superior merits for filling root canals.

Only occasional mention had been made of it prior to this, and perhaps a few had acted upon the hint to try the experiment of filling root canals with chloro-percha, but owing to their unfamiliarity of manipulating the "sticky stuff"—pulling out of the canal nearly as much as was put in with the broach—pronounced it a failure, and went back to their old methods. Undoubtedly soft cement has been rejected by many because of its "sticky, smeary" quality, before mastering the technique of its use, as advocated by the essayist, and they have failed to avail themselves of the many advantages that can be secured through this beneficent agent. The very stickiness of both these agents is the property that gives them their greatest value, after the mastery of their manipulation has been acquired.

I have only a slight cricicism to make upon the title of the paper which may possibly be misleading to some unless they carefully differentiate portions of the text and what I know to be the doctor's practice. "The advantages of cement as a cavity lining" as stated would seem to restrict its use more than was the intention of the writer, as I believe it was his purpose to call attention to the application of it to any part of the cavity at will. Whether for the purpose of covering the entire deeper area, or placing small quantities at different points for securing better anchorage, or for better control of the gold in the initial stage of filling, or for protection of the pulp against thermal changes, or for any other purpose, and that it should generally be used in its soft or adhesive state. Used in this light I can agree with him that it is "the only way" to fill to the best advantage, a large majority of the cavities as we find them, and particularly those we fill with gold, as it is so much more manageable under gold than under amalgam, with the exception of four walled cavities.

The technique can be shown in the clinic so much better than by written description that I will not dwell thereon, and suffice it to say, after more than four years' frequent use of adhesive cement, the results have proven so satisfactory that my verdict is, its intelligent application is safe, sane and scientific.

Dr. Fred B. Noyes, Chicago:

I have within the last half hour, since listening to this paper and discussion, been tempted, when I go back to Chicago, to take my microscope and scientific apparatus and throw them into the Chicago river, for it seems to have destroyed my faith in things to which other men pin their faith, and to give me faith in things which other men doubt. I cannot understand the faith of the dental profession in cement. To me it is the most unreliable thing that I know anything about. It has seemed to me for a long time that in cement we had a material which worked differently under different circumstances, so that we could not say that our results would be the same twice. I have taken cement out of the same bottle, and, at the same time, placed two similar inlays as nearly exactly under the same circumstances as I could do it, yet I have had one stay in, and the other one come out in six months. There is a difference in the action of the cement. I cannot understand it. I do not see how any man, who has ever removed a crown or a bridge, and cut the cement out from under it, and has had the delightful sensation to his olfactory nerves, can believe that cement hermetically seals anything, for we will find that this cement is permeated by organic matter. How did it get there You cannot take cement and follow the setting of it under the microscope without seeing it change and wobble around in different ways, not for fifteen minutes, but for a day or forty-eight hours—I do not know how long. I do not believe there is a chemist at the present time who would attempt to explain the chemical reaction which occurs in phosphate cements. We do not mix cement upon a chemical formula. Everything I have done with cement has made me feel unsafe with it. On the other hand, if there is anything that I have studied carefully, and have evidence for a firm belief, it is that if you follow certain definite physical laws, which are logical and understandable, you can pack cohesive and non-cohesive gold into a cavity so that it is absolutely tight.

The first thing that induced me to speak on this paper was the logic of the first argument. I am proud of my profession. I am proud of what it can do and what it does do, and I am willing to admit that if a man presents an argument against a procedure because the majority of my profession did not have skill enough to carry out, it would bias me against such an argument at the start. If a man will tell me that a certain thing is better but harder, if I do not get ambition enough for my profession, to master its difficulties, to do better, then I would want to stop practice. I do not like the argument for a cement lining because it makes the work easier. I feel that if we put in a cement lining we must have just as good technique for our gold as if we did not have cement there. We have had presented to us the argument that a cement lining corrects the imperfections of adaptation. That is no argument, in my judgment. There are arguments for it and reasons for its use, and many of these have been presented. But I want to put emphasis on arguments that are sound, clear and logical, and cut out those which I believe tend to degenerate the ability of our profession. It seems to me that the last few years everything has been combining against gold fillings; that the dental profession is in danger of going into a condition where the majority of its members will not make them. In my judgment we have got to, and I believe, too, that the difficulty of making a good gold filling has been enormously exaggerated. The fact is this: The principles of packing gold are perfectly clear, definite and logical. They are based upon certain definite physical principles which can be easily grasped by the mind, and when we follow these principles out step by step, we know what the result is going to be.

The cement lining adds another technical step to the operation which every man ought to master, for every man should be able to make a good gold filling with a cement lining or without one. I do not believe it is an advantage under certain fillings. I believe it is a decided disadvantage under certain fillings.

Dr. Corbett (closing the discussion):

I have only a few words to say in closing. Dr. Hewett wanted to know how close I put the cement to the pulps of teeth. We all have cavities that reach the border line between devitalization and trying to save the pulp alive, in all such cases care should be taken to cover that portion of the cavity next to the pulp with gutta percha or temporary stopping; where there is no indication of the decay having encroached upon the pulp there is no danger of destruction by cement lining.

In answer to Dr. Noyes' statements, I will say that I believe that my practical experience in the use of cement as a lining is equal in value to his in microscopical work, and it is results we are trying to get. It is such a rare thing to lose a filling where cement has been used as a lining, that the results are conclusive.

DISCUSSION OF DR. ALLEN'S PAPER, "A COMPARATIVE REVIEW OF THE LAST TWENTY-FIVE YEARS OF DENTISTRY AS GATHERED FROM A STUDY OF THE PROCEEDINGS OF THIS SOCIETY."

Dr. Edmund Noyes, Chicago:

I did not receive a copy of Dr. Allen's paper before leaving Chicago, and therefore I can not make as good a discussion of the paper or subject as would be desirable. The first part of the paper referred to the attitude and influence of the State Dental Society upon education, and as that subject has been pretty warmly discussed this evening, the most natural thing is to say a little about it in this connection. It has been a matter of great satisfaction to me that the members of the Illinois State Dental Society, who were members twenty-five or more years ago, only a small fraction of whom were educated in high schools or colleges, or even in dental colleges, should have been so earnest and strenuous for the advancement of the standards of education by every influence and power which they could exert. There came a time when the members of the State Society felt it was better that the Society should stand for a competent and educated body of men practicing dentistry upon high levels and ethical standards than it was that the society should do missionary work by admitting to membership every sort of practitioner in the State. The latter, of course, was done at first and was right, but the time came when it was worth while to make membership in the State Society stand before the communities of the State as an endorsement of a man's competence. And so we modified our constitution and appointed a board of examiners who were instructed to admit to membership all men who could furnish diplomas from dental colleges, and to give an examination, which was not a farce, to all others. There were many men seeking membership in the society who had not diplomas, and this went on for a good many years, parallel with the execution of the State law by the State Board of Dental Examiners, and it was a matter of common knowledge and common remark that the examination by the board of the State Society for admission to the society was just about equivalent to an examination for practice which the State board was giving. We wished it to be so. I speak of this to show the influence this Society exerted and the standard which it upheld in those days. There are only one or two other things I will stop to talk about now.

Dr. Allen probably was a little wrong when he spoke about root filling. During the whole course of my practice, I have been acquainted with but few men who were in the habit (and my practice goes back fifteen years further) of filling the roots of teeth, any portion of them, with gold or tinfoil. There were men who said they used these things sometimes. Dr. M. S. Dean for one. My own preceptor filled teeth with base plate gutta percha when I was a student under him in 1865, using it so hot as to be plastic and sticky. There are a great many good things which the Illinois State Dental Society has stood for and for which its influence has been felt, but I have not the time to speak of them now.

DR. GEORGE D. SITHERWOOD:

I hastily read the very excellent paper of Dr. Allen on the way to this convention. My remarks, however, will not be much in the nature of a discussion, but more likely like a supplementary account of the work of the Society. I became a member at the meeting in Bloomington in 1880 and have attended all the meetings from that time until the present. At the meeting in 1880 Dr. C. A. Kitchen was president. He gave an address on the rise and growth of dentistry in the last century from De Mayeur, James Gardette, the Greenwoods, Horace A. Hayden (1804), Edward Hudson, Dr. Chapin A. Harris, Dr. John Randall, and so on down the list. Transplanting was a favorite practice at the beginning of the nineteenth century according to this paper. Nervous reflex action was the subject of a paper by Dr. Garrett Newkirk. Caries of the teeth, by Dr. G. V. Black, was a very able paper at that meeting. In that paper Dr. Black said "decay of the teeth is certainly a specific disease, running a specific course, and evidently arises from a certain specific cause, but this cause is not as yet certainly known." There were some fine propositions in that paper on the subject which were the forerunners of the later more definite knowledge. Some special points to be observed in filling teeth, was the title of a paper by Dr. E. Noyes, of Chicago, at that meeting. The whole subject was treated from a purely mechanical standpoint, yet most of the principles advocated remain the practice of the profession today. The most difference being in cutting a seat for the filling, extending the cutting beyond the place of recurrence of decay and in the approximal finish for the contact point.

The treatment of teeth with dead pulps and alveolar abscesses was the subject of a paper by Dr. C. R. E. Koch. The general consensus of the discussion made carbolic acid and creosote the two principal agents to use in the treatment except where there was enlarged foramen. Pushing through little pieces of lead and letting them work out to the surface, when a cure followed their expulsion was advocated by Dr. A. W. Harlan. Mercurialization from amalgam was also discussed at that time. Dr. Crouse, a distinguished gold filler, went against amalgam because it was "a slovenly material so easily managed that men who use much of it soon lose all the energy and most of the skill they ever had."

1881 at Rock Island. Treatment of teeth with dead or dying pulps; also treatment of alveolar abscess, by Dr. H. H. Townsend; Past, present and future of mechanical dentistry, by Dr. L. P. Haskell; Fractures of the inferior maxilla, by Dr. Thos. L. Gilmer, with illustrations by Dr. G. V. Black; Development of the enamel, by M. S. Dean; Mercury in amalgam fillings, by Dr. E. S. Talbot. In the discussions at that time, one Dr. Spalding, said he had had a gold plate presented for repair that was whitened with mercury, and the man who wore it was so saturated with mercury that small particles of it could be pressed out of the mucous membrane of the mouth, and gathered together in advance of a spatula, passed over the surface, so that the globules could be seen; all this presumably from the effects of amalgam fillings.*

1883 at Decatur. Bromide of ethyl as an anesthetic for dental purposes or any very short operation, by Dr. G. V. Black; Porcelain-faced metallic crowns, by Dr. A. E. Matteson; Method of correcting irregularities, by Dr. Wm. N. Morrison; simpler forms—expansion of the arch—this is effected by ordinary wooden wedges, for more difficult cases where more force is required, he recommended jack-screws with very thin platinum bands cemented to the teeth with phosphate. With such an instrument at our command the extraction of a permanent tooth should be very rare.

From 1884 to 1886 there was not much of importance except discussion of the application of electrolysis, by Dr. W. V.-B. Ames. Irregularities of human teeth, by Dr. J. J. R. Patrick, and Notes on resorcin, cocaine and peroxide of hydrogen, by Dr. Harlan. At Rock

---

*Note.—It does not appear from the discussion that the cases of such extreme saturation were supposed to be caused by amalgam fillings. Probably mercury had been given for the cure of some disease.

Island in 1886 Dr. G. V. Black set up his incubator and showed us how to hatch streptococcus continuosum, streptococcus media, coccus cumulus minor, and other forms of bacteria. Dr. Black followed this the next year at Jacksonville by a paper on micro-organisms.

1889 at Quincy, Ill. This was the quarter century anniversary of the Illinois State Dental Society. Escharotics and coagulants, by Dr. A. W. Harlan. Filling proximal cavities was discussed. To use a matrix or not to use a matrix was the question. Extension for prevention and contact point had not yet been formulated or much talked about. Lack of proper care by the patient in brushing the teeth or use or non-use of matrix caused the failure of fillings. Dr. Noyes did mention extension of cavities toward the lingual and buccal walls in the direction of the natural extension of decay. The banquet was held at the Newcomb House.

In 1890 at Springfield. But little is heard about capping exposed pulps, there had been a decadence of the practice and pulp capping seemed to be going out. Dr. Harlan recommends peroxide of hydrogen as an agent in the treatment of pulpless teeth, and remarkable success has attended its use in this class of cases. Dr. McKellops, of St. Louis, had by this time taught the use of chloro-percha for the filling of the most tortuous root canals until even the stout defender of gold foil for root canal fillings, Dr. Black, had to give in. Dr. Morrison made the first gold crowns. Bridgework was discussed at this meeting. Dr. Crouse said he didn't think bridgework could be taught in a State society by clinics. What is done at clinics simply gives those members who have not studied the question an idea of how the work is done.

The root canals of a first upper bicuspid filled with wood points and chloro-percha at the clinic of this meeting for myself was a failure. It was always lame and frequently pained me until I had them drilled out.

1891 at Bloomington. Dr. E. H. Angle read a paper on Efficiency and simplicity in regulating appliances. It was illustrated by lantern slides. In that paper he said: "The mechanical forces now recognized as the best in the movement of malposed teeth are the screw, the spring of metals, and often elastic or non-elastic ligatures as auxiliaries—forces which are very old and have long been used, and most that has been done by inventors of regulating appliances is to modify the application of these forces. These modifications have been largely in one particular, namely, anchorage. At this meeting the upper right first molar, abscessed roots treated with peroxide of hydrogen and volatile eucalyptol and immediately filled with oxyphosphate and finished with gold at the Decatur meeting in 1883 for Dr. J. M. Blythe, by Dr. Sitherwood, was found on examination all in good condition. Dr. W. H. Taggart exhibited a full upper bridge in the mouth of Dr. Carrier, of Freeport, attached to the third molars, cuspids and right lateral incisor, all teeth porcelain faced except the molars. He also exhibited a removable suspension bridge in the mouth of Dr. Cormany. They were both artistic and well adjusted.

1892 at Springfield. Dr. G. V. Black gave us "The Interproximate Spaces." This paper and what had preceded it in July, 1890. in THE DENTAL REVIEW and in the *Dental Cosmos* of 1891, is of the very essence and beginning of modern operative dentistry. The seven propositions laid down by Dr. Black in regard to the gum septum and the interproximate space, must of necessity fix such common-sense principles in the mind of every careful operator on the teeth that he can never go very far astray in giving good service to his patients.

1893 at Rock Island. Do gold fillings of the present day preserve the teeth better than those made forty years ago? by Dr. Geo. H. Cushing. Recent additions to the therapeutics of pyorrhea alveolaris, Dr. Harlan; Guardianship of the teeth, by Dr. Grafton Monroe; Effect of eruptive diseases on the teeth, by Dr. J. J. R. Patrick. We all recognize their effect at this time. Especially where a child has measles about the period of cutting the permanent set by the pitting that is seen in the teeth. Conservatism in crown and bridge work, by Dr. Rohland; Anchorage of proximate fillings in the bicuspids and molars, by Dr. G. V. Black, in which the step fillings were fully illustrated and described.

1894 at Springfield, Ill. Etiology of dental caries, by Dr. A. H. Peck; Swaged aluminum plates, by Dr. Geo. D. Sitherwood; Amalgam fillings, by Dr. T. W. Pritchett; Reciprocation of force in orthodontia, by Dr. C. S. Case. This was a very elaborate paper, giving many complicated appliances. Relation of the profession to our dental colleges, by Dr. Truman W. Brophy.

1895 at Galesburg. Results of experimental root canal fillings, by Dr. D. M. Cattell; The human tongue, by Dr. C. R. Taylor; Combinations of metals in amalgams; A commentary on the Illinois statutes of 1881 regulating the practice of dentistry, by Dr. C. R. E. Koch; Abnormal lateral bite, by Dr. C. S. Case. Dr. Custer exhibited his electric ovens for baking porcelain. Crown and bridge work was illustrated by stereopticon views by Dr. C. V. Peterson, of Dubuque, Iowa. Saddle bridge explained. Dr. Taggart extolled the saddle bridges which he had been making for two years previous to this meeting.

1896 at Springfield, Ill. New methods for producing bicuspid band crowns with porcelain facings, by Dr. B. J. Cigrand; New outlook in dentistry, by Dr. C. E. Bentley, looks backward fifty years. One of the tendencies of the day is toward preventive medicine. Cataphoresis, by Dr. W. W. Moorehead. This was then a new thing and we thought it would be a great boon for the relief of pain. Hypnotic suggestion was spoken of as one of the outlooks in dentistry.

1897 at Peoria. Pyorrhea alveolaris, by Dr. J. W. Wassall. 1. Definition. 2. Symptomatology. 3. Pathology. 4. Etiology. 5. Treatment. 6. Prophylaxis. Dr. Black's paper at Quincy in 1882 was the first real attempt at a scientific description of this disorder before this society. He defined it as "phagedenic pericementitis." Diffusibility of coagulants in dentine, Dr. E. Lawley York, Cataphoresis, was up for discussion again. Is there danger of injuring the dental pulp and other tissues by its use? Principles of force and anchorage in the movement of teeth, by Dr. C. S. Case. For regulating teeth the mind needs to be well trained in the simple laws of physics. Classification of cavities, by Dr. W. E. Harper.

1898 at Springfield. Amalgam, by Dr. C. P. Pruyn. This old subject was thrashed over again. New methods and appliances in orthodontia, by Dr. C. S. Case; The ceramic art in dentistry, by Dr. John E. Nyman, was a paper of unusual interest in many ways. The status of porcelain inlays at that time is indicated by the following quotation from that paper: "Porcelain inlays, when made and used in the usual manner, are so seldom a success that I do not believe in them at all, except when used to fill buccal cavities in the incisors and bicuspids, and even then when made by burnishing thin platinum into the cavity as a matrix and fusing the porcelain compound into it, afterward stripping off the platinum, the result is usually an artistic failure, as the porcelain compound when fused in such small quantities seldom comes out exactly the same color twice."

1899 at Chicago. Bacteriological investigation of pulp gangrene, by Dr. Geo. W. Cook; Manipulative methods in crown and bridge work, by Dr. H. J. Goslee; The structure of the enamel with reference to cleavage and in the lines and angles of cavity margins, by Dr. F. B. Noyes. The last mentioned was a star paper, which helps to emphasize the scientific character of our work.

1900, 1901, 1902, 1903. Emphasizing many common practices and clearing up the real meaning of "extension for prevention."

1904 at Peoria. The color problem in porcelain work and its solution by the new pyrometer furnace, by Dr. Weston A. Price; Microscopic study of cements, by Dr. Geo. C. Poundstone. The splendid report of the committee on reorganization of the Illinois State Dental Society, Dr. Arthur D. Black chairman of the committee. It was a report, however, that worked, as Dr. Allen has already mentioned the first great meeting in 1905 at Moline, and the reorganization which took place with all the great increase of membership, and the many component societies that have been organized throughout the State.

This discussion would be very incomplete without mention of one other movement of the greatest importance to every dentist. In this society was started that grand organization known as the Dental Protective Association in 1888. Too much credit can not be given to Dr. J. N. Crouse, who year after year as the president of the organization, came before us urging members to join and help in the great legal fight against the unjust claims of patentees asking royalties from the dentists on crown and bridge work. Thanks to Dr. Crouse and his indomitable will and many years of hard work, employing the best legal talent, every dentist is now free, and no International Tooth Crown Company or any other company or individual comes around trying to collect so-called office rights. The younger members of the profession will never be able to fully appreciate the meaning of this triumph over the "patent-right sharks."

What have we settled? We have learned the cause of caries of the teeth and to a certain degree the prevention of the same. How to use all the modern mechanical appliances in a proper way and in connection with such therapeutical agents as will assist in giving the best results, not only in restoring the teeth and surrounding parts from an abnormal to a normal condition, but in a large measure keeping them so. Dentistry then is a department of the science and art of healing.

Dr. C. E. Bentley, Chicago:

Nothing has so much impressed me as the evolution of dental societies, and particularly the evolution of this Society. I have been coming to the meetings, with the exception of one year, since 1891, and when I first came here I was surprised at some of the things I saw. There was not the keen interest observed then that has been manifested at these sessions; but there was a greater tendency toward conviviality and of running out to other attractions. To have night meetings and remain here until twelve o'clock fifteen years ago was a moral impossibility. Look at the meeting we had last night. We were discussing papers until midnight. Look at the interest that was manifested both in the papers and the discussion. Gentlemen, there has been a grand evolution not only in the management, but in the personnel and general character of this Society. That to me is one of the greatest advancements I know anything about.

DISCUSSION ON DR. OLSON'S PAPER ON "EXTRACTION OF TEETH."

Dr. A. Brom Allen, Chicago:

In opening the discussion on Dr. Olson's paper there are a few points which should not be overlooked. He has classified his cases as near as possible, and has given the movement in the extraction of each case, but the simplest method in all cases is to apply force in the direction of the least resistance. In cases of badly broken down superior molars I always select the lingual root with the stronger of the other roots, and by this method you remove the lingual and one of the buccal roots, so that the remaining buccal one is easy of extraction. In regard to requesting patients to loosen their clothes, I find it is not necessary unless the patient feels uncomfortable, in which case the collar may be loosened. This does not occur very often. It is not necessary to diet before the administration of gas, but frequently they come to me, having been advised by their physician to do so. The position of the patient is of the greatest importance, and in operating the head should be well erect, so that tooth substance or blood clots do not get into the throat, and thereby cause strangulation. The operator should be back and at the side of the patient, with the head of patient at the waist line, so that it leaves the arm well extended and free, thereby giving more strength and ease of manipulation than if in a cramped position. The higher the arm is placed the force is decreased in proportion; as an illustration, if you were to remove a cork from a bottle, you would not put it up under your chin, but place it down low so as to get the best possible purchase. In the extraction of broken down teeth or roots, force the beaks well down on the roots, under the gum tissue; by so doing you are not so apt to break it off, as the second attempt to remove the root will be much harder.

I have changed my mind in regard to third molars, from conditions prevalent, and I feel, from seeing twenty-five mouths where I used to see one in regular practice, that with very few exceptions the patient is unable to keep them brushed properly, and hence a distal cavity in the second molar, where if the third molars had been removed at the proper time, this condition would not have developed; however, if first or second molars are lost the third should be retained, as they often move forward and occupy the place of the second; this occurs, however, when the loss of the first molar is early in life, at from nine to ten years of age. The most troublesome in the whole list of extractions are the unerupted or impacted inferior third molars. These cases require more skill than all the rest put together. I have had several cases, where the lower third molar was unerupted, and undeveloped, and the only way one could determine it was there was by taking a skiagraph, which shows without any guess work the position in which it is impacted and why it cannot erupt, though often causing constant pressure, and giving the patient neuralgic pain which will continue unless the tooth is removed surgically. A case of this kind is not simple extraction, as many of the profession think, but requires skill, and great care to avoid the removal of the second molar by trying to force the third molar out, without careful removal of the bone, buccally and distally, which enables you to tip it backward and lingually. These cases come under the class of surgery. It is far more difficult to drill the bone surrounding this tooth and work on bony tissue than it is for a physician to cocainize a pair of tonsils, and work on soft tissue.

Dr. J. W. Ritter:

The extraction of teeth is of greater interest to the practitioner in smaller towns, than to those who reside in larger cities, as the larger cities are blessed with extracting specialists. I have many times wished that I might delegate my extractions to some one who was prepared to give them not only their undivided attention, but that amount of skill which comes to those operators who do special work along any line.

Dr. Olson has, after dividing the teeth into six special classes, given us instructions for the extraction for each class. One might infer from the reading of his paper, that by following these rules any tooth might be successfully extracted, but after reading about all the literature on the extraction of teeth, which I could procure, I have had many failures, and I have reason to believe, that the experience of every other operator has been similar to mine. Probably the best general rule for the extraction of teeth, would be to mix a little good common sense with our extraction.

DR. EDMUND NOYES, of Chicago:

It has been remarked by one of the speakers that the first man who practiced the extraction of teeth as a specialty in Chicago was Dr. Slonaker. In the years 1868-9, for a short time, Dr. C. A. Board practiced extracting teeth with nitrous oxide gas as a specialty. He did not get sufficient support, however, from the dentists of the city to make it a living occupation, and after a year or two he joined with that the practice of prosthetic dentistry, which he continued until the time of the great fire.

One point that interested me in the paper was the reference to the key as an ancient extracting instrument. A work by Dr. Snell republished in this country in 1832 (previously published in England), speaks of the key as the modern instrument for extraction, and says that the forceps is the ancient instrument, and it is affirmed that he himself has abandoned the modern instrument—the key—for the forceps, and has found that while the forceps requires much more skill and experience, it accomplishes extraction with less pain and is preferable; but he advises all those who have not sufficient skill and experience to use the key. He affirms that the forceps dates back to the time of Celsus, and has not been so very materially improved in the interval. But that he himself insisted that the forceps made for him and his friends should be sent to him in the rough, so that he might for himself supervise the accurate shaping of the jaws to the exact adaptation for the purpose intended, which no instrument maker at that time could do. This interested me at the time considerably and if we think for a moment, the whole matter is not very strange. Extracting teeth is the one operation in dentistry which has always been necessary, even for a thousand years past, and it is not surprising that the arrangements and instruments for doing it should have been fairly adequate.

Dr. Olson (closing the discussion):

I wish to show the members three forms of special forceps I use for extracting teeth. Dr. Allen spoke of using the butt end of the forceps for this purpose. Here is a forceps (indicating) that I use for extraction of third molars. I use the same method in operating. I do not get on a box, however, but get on the floor. When operating above, I get on either side of the patient; and Dr. Allen misunderstood me in regard to the extraction of lower third molars. My method is practically the same as his, using a lateral and upward motion, and in a good many cases we can extract these teeth lingually easier than otherwise. In the upper jaw third molars can be extracted buccally.

A member: I would like to ask Dr. Olson as to the danger of the administration of nitrous oxide gas to a woman for extracting teeth who is in the sixth or eighth month of pregnancy?

Dr. Olson: I do not think there is any danger, and I would not hesitate to extract teeth under those conditions.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting of the Chicago-Odontographic Society was held in the Chicago Public Library building on Tuesday evening, May 21, 1907, at 8 o'clock.

The president, Dr. H. J. Goslee, occupied the chair.

Dr. E. J. Perry of Chicago, read a paper entitled: "Partial Dentures" which was illustrated by stereopticon slides.

DISCUSSION OF DR. PERRY'S PAPER.

Dr. B. J. Cigrand:

I am very glad to have had this subject brought to our attention, though the problem is no doubt one of the most unsatisfactory that we have to deal with in the practice of prosthetic dentistry. While it is gratifying to know that during the last seventy years so much has been accomplished in crown and bridge work, prosthetic dentistry has not made an equal advance. I quite agree with Dr. Goslee who recently read a paper on this subject that created quite a furore, that not very much has been done for prosthetic dentistry in the last twenty-five or. fifty years.

I was pleased that Dr. Perry said that prosthetic dentistry and operative dentistry are so interwoven that you can hardly separate them, and see any line of demarkation. The time was when a mechanical dentist was one thing and an operative dentist was something else. Now, they are getting closer and practically standing firmly together on the subject of prevention as well as preservation.

Dr. Perry has tonight shown us partial dentures with labial uppers and buccal uppers, sometimes both in the same plate. In the treatment of these cases, simplicity is a very important factor. Strength is another factor, as is also security and serviceableness and sightliness, all beginning with "s"; simplicity, strength, security, serviceableness and sightliness. Those four words would tax the ingenuity, in buccal cases, of any man living whether he is giving his attention to operative dentistry or prosthetic dentistry or orthodontia or any other phase of dentistry. Buccal as well as upper and lower phases of this work develop changes involving sometimes the anterior teeth and it is the judgment of all practitioners that they are no doubt the most unpleasant things we have to deal with; they give us less satisfaction and the greatest amount of work.

I believe that in the days gone by practitioners generally made more gold partial plates than they do now. I believe that the statement will be found to be correct that in the last twenty-five years our partial cases have been practically made entirely of rubber, whereas in the days of old they made partial cases mostly of platinum and baked porcelain and gold. We ought to give more attention to the partial cases in the way of metal work and deviate from the rubber.

Dr. Perry asked a question regarding one case where the teeth had been removed and where the lower teeth had encroached upon the alveolar ridge which they always do because of the lack of that natural exercise they have when the teeth are there. The suggestion came to my mind that years ago Dr. Kingsley said that when the bite is so close that he did not find it possible to put in porcelain teeth such as would stand the strain of mastication, he made a surgical case of it and put the patient under an anesthetic, opened the alveolus, and with nipper forceps proceeded to take away some of the process, allowing secondary healing to set in and by that means he was able after several months to put into that patient's mouth an artificial set of teeth. He refers to that at some length, calling this particular case his surgical case. I don't know what success he had in that direction, but nevertheless, it is worthy of thought, and possibly further demonstration along that line might give us some good results.

Much credit is due to some men, notably Dr. Roach, for having given so many new ideas that are founded upon the same principles of practice, and I am very glad to tender him a compliment because of that. I think he has done much to put the subject of dental cases within reach and to enable us to put into practice strength, simplicity and serviceableness. I know of no other that has contributed so much unless it be Dr. Land of Detroit, Michigan, who has labored practically all his life on this particular subject and has given the subject of porcelain and platinum his undivided attention. I had the pleasure of seeing in his laboratory in Detroit, the greatest variety of cases along this line that I have ever seen in a single collection, and they were nearly all made of platinum and porcelain. He has done much, written much and accomplished much. So I say to Dr. Roach and Dr. Land belong a great deal of credit for having in these present times given us something that is scientific and serviceable.

I would like to say that I approve very heartily of the plan of using platinum or iridio-platinum wire in connecting the buccal cases by means of the lingual swing of this wire and doing away entirely with covering the anterior portion or lingual surface of the arch because the majority of these cases as they swing about the anterior portion of the tongue invariably encroach upon the cervical margins of those teeth, and as the rubber or gold encroach upon the cervical portions of the teeth it often irritates the teeth and superinduces pyorrhea alveolaris

The majority of the cases do not fit well at that point and cause a great deal of discomfort to the patient and invariably create a harbor for all kinds of foreign matter and buccal mucus, so that this wire is a great advance in the right direction. I think a gentleman who is present tonight has done much in the advancement of this work, and that is Dr. Goslee. He ought to be called upon.

Dr. W. D. N. Moore:

I am glad to have the honor of discussing this excellent paper and wish to compliment the essayist upon what he has given us here this evening. As I had not received a copy of the paper I can promise little in the way of discussion. However, I notice that the paper offers some opportunity for comparison between fixed and movable bridge work. I think the unsanitary conditions often resulting from fixed bridges are in most cases due to poor judgment in the use of the fixed bridge, together with poor technique in the making of them. Very often we find a fixed bridge which is so poorly constructed that unsanitary conditions are sure to follow, as well as the loosening of the abutments, due to poorly fitted bands. Because of this the principles of fixed bridge work have been unjustly condemned, while the real cause of failure is unskilful technique and lack of judgment in its use. In such types of removable bridge work as have been demonstrated here tonight and in many other cases of this kind I think this method of attachment is highly commendable. It is in these cases, particularly, where the old-style partial denture has failed, that we are given an opportunity to do a great deal more in prosthetic dentistry than we have heretofore been able to accomplish, especially in cases where the posterior teeth are missing. The ideas that have been brought out regarding the different attachments that have been devised by Dr. Roach are excellent, especially that of bringing a wire around the anterior part of the mouth and having it lie beneath the tip of the tongue. I think these cases have been more perplexing to the average practitioner than any other one class of work. I know that it has been a common thing to see a patient come into the office with a little partial plate, perhaps a couple of teeth on the posterior part of it, carrying it in her shopping bag instead of in her mouth, and until I tried this scheme that has been illustrated to us here tonight by the use of the lantern I found I could not satisfactorily take care of such cases and was very glad to be able to resort to the attachment given us by Dr. Roach. Another point that I wish to refer to is the one which was brought out by the essayist relative to the bringing together of the operative and prosthetic branches of dentistry. I do not see how the best work can be done if the operator does the part that has to be performed in the mouth and turns over the balance of the work to the man in the laboratory. The conditions are never the same in any two mouths; the mechanical man becomes simply a machine, not knowing what this case demands and what that one does not. I am very glad to see that the essayist emphasizes that point particularly of the operator following the work from its beginning to its conclusion.

I have no further remarks to make upon this subject, but should like to hear from Dr. Goslee along this line because I have been inspired by what he has shown me, as I have also been by the work of Dr. Roach. I feel that great progress has been made along the right lines, judging by the results that have been shown us by our venerable friend, Dr. Perry.

Dr. W. H. Taggart:

Dr. Perry alluded to the fact that vulcanite would be used more if there were more money in it, in comparing it with the higher grades of dentistry. Now, really, gentlemen, I think there is more money in vulcanite work at $10 per plate than there is in a continuous gum plate at $200. I honestly believe I can make twenty vulcanite plates in the time it would take to make one continuous gum case, and of course at nowhere near so much expense. I do not think that is the only thing that keeps dentists from using the higher grades of plate. There is something about the continuous gum plate that does appeal to the man who wishes to do artistic dentistry, but I do not think it is possible for a man to learn high grade dentistry and do the work with sloppy materials. We never see high grade dentistry coming from a man who uses amalgam, and thinks it is as good as gold. That man will always do sloppy gold work and sloppier amalgam work. A man who tries to make himself and his patient believe that a vulcanite plate is just as good as a continuous gum plate will never do very good vulcanite work. The reverse of that is not always true, as the man who can always do good gold work will always or nearly always do good amalgam work. The man who can do good gold plate work if he gets down to it can do good vulcanite work. For that reason I do not think it is always a question of the money that may be in these higher grades of dentistry.

Dr. Perry alluded to the fact that in years gone by I made the remark that if a tooth needed a crown that tooth needed it more than it needed the pulp. In former days I would have destroyed the pulp and put a crown over a bicuspid in order to make a permanent attachment for a removable plate. At present I would not do it. I would use the Roach attachment on the live tooth. That may seem a little bit heroic, and it may be that a great many would not have the courage to drill into a live tooth to do that. I prepare my patient for the emergency that may come by saying to him: "Now, I am going to put an attachment on this tooth by drilling into it. It may become quite sensitive. I may encroach upon the pulp. If I do I will have to destroy the pulp. If I don't I have saved you that much trouble." If I can get in there without impinging on the pulp at all I have saved from $10 to $20 worth of extra work on that tooth and have got a sound attachment. In preparing the tooth that way if I find that I do impinge upon the pulp I have him prepared for the next step, which is, destroying the pulp.

Dr. Cigrand is nothing if he is not complimentary and he has been complimenting Dr. Goslee and Dr. Roach and Dr. Perry, and given them credit for all this advance. I rather feel that we should give credit to whom credit is due. As I understand it, this intricate case that Dr. Perry has shown was one that existed in his own mouth. It strikes me that as honest, upright and sincere dentists we should give a vote of thanks to the calf which horned him in his early days, for without that event we would never have had an opportunity to see this intricate case. (Laughter.) I know it is intricate because Dr. Perry has had a good deal of trouble with his mouth for many years.

Dr. F. E. Roach:

I assure you that this subject is one that I am intensely interested in and I cannot refuse to avail myself of the opportunity of saying a few words upon it. I think the sum and substance of Dr. Perry's paper was the idea which he endeavored to bring out but did not emphasize, and which I would like to emphasize, that the use of these partial dentures is to save the remaining teeth both in the construction of the denture and the elimination of the future destruction of the remaining teeth. That is a point I place a great deal of emphasis upon, that the selection of such a denture whatever it may be will have for its consideration the minimum amount of destruction of the remaining teeth. I believe that this is the mission of the dentist today.

In regard to the use of this wire that has been spoken of by the essayist and by some others here this evening I believe that the use of this wire in judiciously selected cases is a great advantage. It affords in the partial denture the combined advantages of the stationary bridge and the removable bridge. In many of these cases where we have long spans and the abutments are more or less loosened, the combining together of the abutments with wire affords a degree of stability to the teeth that will materially extend the life of the teeth. You all know that successful treatment in a great many cases depends upon the fixation of the teeth, and in supplying these partial cases this is a very large factor in extending the life of those teeth. It also affords a degree of stability to the denture itself. Let your attachment be whatever it may, clasp or any other form, that has nothing to do with it. It is the principle we are working for, and it is the advantages of this wire that I want to call your attention to. In using the wire, we connect the lower partial case, a point I wish to emphasize and I hope every one of you will adopt that form of connecting the two sides of the lower partial case in any form of construction of lowers that you may see fit to use. I consider this very necessary. It is a very much easier plate to make than you would imagine. It is very much less in the way of the tongue, stronger and the life of the remaining teeth will be very much extended by virtue of its use. For that reason I hope that everyone will use this wire in partial lower cases.

It has been suggested by many that possibly this wire is not strong enough to answer the purpose for which it is intended. At first thought you might get this impression, but it is vastly stronger in the majority of cases than any form of plate that we may use in those cases. The reason for this is that the wire is drawn through the plate and is of uniform strength throughout its length, whereas in a plate as commonly constructed your swedging or vulcanizing leaves some one point that is weaker than others, and it is more likely to break. So that there can be no criticism made upon the ground of the lack of strength of this wire. At the present time we are using generally 13 gauge wire for this purpose, and in the placing of this wire my experience has been that it is better not to fit it too closely to the tissues. Fit it loosely so that it does not press into the tissues. You may lay it well down in the floor of the mouth, and it will be a great pleasure to those of you who have not had experience with this form of partial denture to see the results that you will get.

I do not believe that the use of splints or supports connecting the two sides of the upper cases is desirable. It seems to me that they form a greater obstruction in the upper cases than is caused by the band across the roof of the mouth.

Dr. Hart J. Goslee:

The hour is very late, gentlemen, and the chair does not wish to enter into a lengthy discussion of this subject although I should like to do it. Some three or four months ago I was full of the subject of partial dentures, and so I wrote a paper for the *Dentists' Magazine*, published in Cleveland, entitled "Partial Dentures" in which I was desirous of making some of the points so beautifully illustrated by Dr. Perry tonight.

Dr. Perry does not agree with me when I make the assertion that prosthetic dentistry as it was twenty-five years ago has not progressed in proportion to the other departments of dentistry. I still maintain that it has not and I believe that I could prove it to his satisfaction if I could have him in my office and show him a few cases in proof. That, however, is irrelevant to the subject. I am of the opinion, gentlemen, that we make entirely too many fixed bridges. In all the larger cases where a considerable number of missing teeth are supplied a removable structure built along the lines suggested by the essayist, is ordinarily better, more hygienic, and far more practicable than a fixed structure.

I do not agree with Dr. Perry in one of the assertions he made in the opening part of his paper where he said that to crown a second bicuspid, for instance, and a third molar and insert a fixed bridge would be impracticable and unhygienic. If the condition of those two supporting teeth is at all favorable, it would certainly be favorable for a fixed structure—more favorable for a fixed structure than for a removable structure under ordinary conditions. One of the most ideal cases that I can conceive of would be a second bicuspid and a third molar supporting two intervening teeth, but if we had two or three more missing teeth between those two supporting teeth whatever they be, thus increasing the size of the space between them and thereby increasing the amount of stress to be sustained by them then usually a removable structure would be preferable to a fixed one.

Dr. Moore struck the key hote when he said that fixed bridge work need not be necessarily unhygienic or unsanitary. Sanitary fixed bridge work is possible. We do not always see it but it is oftentimes possible, and if we would observe a little more care in the construction and application of fixed bridge work, we could make our fixtures very much more hygienic than they are.

Dr. Perry is such an awfully good friend of mine that I hate to take him to task before any scientific body, but honestly, gentlemen, with all due deference to Dr. Perry, I cannot quite stand for "part sets" and some other expressions he made use of—the "manufacture" of part sets, for instance. We do not run a factory, gentlemen. We construct, we do not manufacture. I would a great deal rather hear Dr. Perry say "partial dentures" because it is at least pseudo-scientific, and "construction" I thihk is much better than "manufacture." I think Dr. Perry will take no exception to this friendly criticism because I have really been longing to get at him in his presence for some time.

The essayist made a very good point when he emphasized the great importance of doing the right thing at the right time. Bridge work whether it be of the removable or fixed type depends entirely upon doing the right thing at the right time, and if we use judgment in these cases and use it properly we will put in the right thing at the right time, and if we do not put in the right thing at the right time we will have a failure. He made another point when he spoke of the operating prosthetist. We must keep the bonds that indissolubly link the two departments of practical dentistry together. The operative prosthetist is the natural and true dentist, and I wish it were possible for everybody practicing dentistry to become a skillful operator in prosthetics.

I cannot quite understand what Dr. Cigrand meant when he referred in his blackboard talk to casting aluminum on to gold. He said he would not use vulcanite because it would take too much time. It would take a whole lot more time to cast aluminum even though it fused 800 or 900 degrees lower than gold, than it would to make the gold and solder it, or more time than it would to flask your cast and vulcanize it. I think cast aluminum has a place but I would not combine it with gold work.

Dr. Perry, on behalf of the Society and the program committee. I apologize to you for commanding you to read this paper tonight. As I announced to the Society at our last meeting, a gentleman from Philadelphia was to have been the essayist, but for various reasons, was unable to come, and the program committee was not made aware of this fact until two or three weeks ago. As soon as this became known it immediately occurred to us that we might get a capital paper from Dr. Perry, and the wisdom of that thought on the part of Dr. Roach and myself has been exemplified in the paper we have heard tonight. I want to thank Dr. Perry on behalf of the program committee and on my own behalf for responding so beautifully.

Dr. Perry, in closing the discussion, said:

Mr. President, the discussion of this subject cannot be closed.

I can only say that I am obliged to the society for their patience and to the gentlemen who have seen fit to disagree with me. I feel especially honored in being able to read a paper about which some dispute may be had.

It does seem to me that the subject of the paper when we get right down to what the subject of the paper really was, viz.: the fixing of the attachment upon a wire attaching the abutments, is comparatively new, and the profession should have its attention drawn to it. Whether we shall make a bridge from the third molar to the second bicuspid and contend that it is sanitary, is immaterial. Goslee could make a bridge of that kind. One of the pictures that was thrown upon the screen carrying a removable bridge from the cuspid to the second molar or the third molar, showed a very short bite, and indeed a fixed saddle would have to be placed upon the bridge in order to make a fixed arrangement, which would necessarily be unsanitary in any hands no matter who made it, because of the shortness of the bite. In determining what is the best thing to do for a patient, a man must take into account what he can do, and must involve his personal honesty in the case. I maintain that the operative prosthetist can use rubber artistically and make a better set in many cases than he could with platinum or continuous gum. That is a fact, and it is time the experts were taking hold of rubber and doing with it what can be done and what cannot always be done with platinum. I am not decrying platinum. I grant you that artistic work can be done with platinum, and where it can be done it should be done, and every man should use it and every man should recommend it. It will add to his artistic taste. It will add to his skill, but at the same time I wish to say that we should not despise rubber.

Gentlemen, I thank you for your patience with me. I know that the discussion of these pictures was desultory and scattering. I have appealed to you from my conscience. I am conscientious in what I have said in reference to these partial dentures, this attaching of the abutments with this wire is the most distinct advance that has been made in dental prosthesis in years gone by. The range of adaptability of the work, tying the roots and teeth all together, will grow upon you as you use it, and as Dr. Roach has well said these loose teeth may be held firmly. Tie the teeth together and keep them firm and after a while they will be firm—often the loosest roots. If you have carefully cleaned that root you do not know but what that root may become a firm abutment or pier.

AMERICAN DENTAL SOCIETY OF EUROPE, ROME, 1907.

DISCUSSION OF DR. KELSEY'S PAPER ON "SINUSITIS."

Dr. George Northcroft
understood that the author suggested the cause of the sinusitis in the tooth passed round was due to the extraction. On a careful examination of the tooth he noticed it had been extensively filled and was under the impression that it was a pulpless tooth which had had an abscess that had gone through into the antrum and rendered the bone round the tooth so defective that it was practically necrosed, and came away when the tooth was extracted.

Dr. Kelsey
confessed he had not thought of that view of the case, but hardly believed the bone was necrosed. The patient was a man in perfect health whom he had seen frequently since the tooth was taken out fifteen years ago. Although the primary cause might have been an abscess, it seemed to him that that would have disappeared, in view of the man's health, had not the opening of the antrum caused an additional difficulty—if it was not the primary one—and rendered the cure a little uncertain.

Dr. Northcroft
did not wish to suggest that the bone was necessarily a piece of necrosed bone, but it was very well known how inflammations would cause bone to be weakened very much, and that was, he thought, probably the cause of the large amount of process coming away with the extraction of the tooth. The roots were somewhat twisted and it was quite possible that the bone was perfectly healthy and strong and yet came away when the tooth was extracted.

Dr. Webster
asked whether a tendency had been found for the opening into the cavity to close and heal and whether the author could make any suggestion as to hastening that process.

Dr. Kelsey
said the greatest part of the experience he had had was in his own mouth. About ten years ago he had a sinusitis caused by a third

molar, and having considerable confidence in his own ability as a tooth extractor he removed the tooth himself. He waited for the healing and then had the jaw perforated where the molar was missing and it was treated by the system he had spoken of, washing it with boracic acid, and the sinusitis was cured in a very few days and the opening allowed to close. He thought when the disease was apparently cured there was no harm in allowing the opening to close. No fresh trouble occurred until within the past year. There was always danger of a relapse. When the cause was a tooth and the tooth was removed the danger was removed, but the disease was quite as frequently caused by influenza, and in that case there was more difficulty in curing it and more doubt as to the result. With regard to treatment, he had found it impossible to say all that should be said in such a short article. On his way to the meeting he met a surgeon from the south of France and asked him his opinion on the subject, and his reply was, "Wash out your nose with salt and water and have no operation performed."

Dr. F. Aguilar

had successfully treated several cases, employing a syringe manufactured by Ash & Sons especially for the treatment of the disease, a syringe that produced a continuous current of an antiseptic liquid within the antrum. The syringe was introduced by a trochar of the same size as the metallic tube of the canula, and the canula was so arranged that it had two tubes, one longer than the other, the entrance being by the long tube and the outlet by the shorter, and thus there was a continuous flow causing a very thorough washing of the antrum. The anatomy of the antrum presented so many abnormalities, as Dr. Cryer had proved by his researches, that it was never possible to be sure of the position of the base of the antrum and that was not a small difficulty in the treatment of such diseases, the complication of which was generally due to the formation of a polypus growth within the antrum. Rhinologists maintained that the cleaning of the antral cavity could not be done by the opening resulting from the extraction of a tooth, but he had successfully treated several cases by extraction, filling the cavity with iodoform gauze, and renewing the treatment every day for several days until all suppuration had disappeared. He continued the washings for some time and kept the orifice closed by the action of an obturator, either metallic or rubber, with clasps attached to the neighboring teeth. The results had been quite satisfactory. Sometimes closing of the orifice was excited by cautery with nitrate of silver. The method, however, was strongly condemned by rhinologists, who maintained that only by the nasal or canine fossa should the antrum be entered even when antral disease was caused by a tooth. It was not possible to say whether the treatment of antral disease belonged to the field of dentistry or rhinology, but he should not hesitate to treat cases wherever they were of dental origin.

Dr. Fernald

said that in over thirty years' practice he had only had two cases of disease of the antrum and one of them gave him a great deal of trouble. He thought he had cured it, but after three months it came back again and he had no doubt the cause of it was an abscess on the first molar. Both the bicuspids were bad and might have been diseased as well. He opened well through from the first molar, getting plenty of space, and on the second occasion he kept it open for months, and finally the disease was completely cured and never returned. If he had a bad case he should not hesitate to open through the canine fossa. Cleanliness and an opening for a long time seemed to be the best. Boracic acid and salt were both good, but the chief point was to keep the antrum open.

Dr. Achard

said he had a case recently in which a celebrated doctor had operated both through the nose and through the canine fossa and the patient continued to have fever, up to 104 or 105, for two or three weeks. He telephoned from Zurich to the doctor and they arrived at the conclusion that it was better to extract the first molar. That was done, and with the pliers he was able to penetrate into the antrum. He then excavated the opening, enlarged it, and syringed with a normal salt solution. When he first put in the pliers there was a very bad odor, but after syringing for three days the odor grew less and he stopped syringing on the advice of the doctor, who thought it would be better not to irritate any further. The opening closed up within a few days. Thus, although two openings had been made by one of the most noted surgeons in Europe, one through the canine fossa and one through the nose, they were not sufficient; there was still pus in the bottom of the antrum and the most thorough way to get at it was by extracting the first molar. When that was done pus came out through the nose and through the opening on the right side, the fever stopped on the second day, and the patient was now quite well.

DR. KELSEY

said he had been in practice for thirty-five years and could recall two or three cases that caused him no trouble, but could also recall one where a man over middle life came with suppuration to such an extent that when he washed out the antrum he had to open the windows. He used an injection of iodine and water in a solution of about 1 in 3 and the case was cured in about a month. He often saw the patient now on the streets, an old man, and he had never had any trouble since. He recalled another case where the canine fossa was opened. His partner and himself treated the case and it seemed to get well. He lost sight of the patient, but heard of his death not very long after from some cerebral trouble, which might have had something to do with the disease. In another case the bone was distended and he commenced treating the case by injecting a solution of boracic acid, but after two or three injections the case passed into the hands of a surgeon who perforated through the cheek and the man did not live long. He might, however, have died of diabetes.

DR. N. S. JENKINS

said that in cases of abscess of the antrum caused by a defective tooth there were many instances where an extraction was an objectionable procedure and with the methods of disinfection now available unnecessary. In a case of sinusitis caused by an infected tooth the sacrifice of the tooth was not necessary in order to obtain a cure. Some of the most unfortunate instances that had ever come under his observation had been where the surgeon had insisted upon the extraction of the tooth and where in consequence it had never been possible entirely to close the sinus. With regard to treatment, the use of peroxide of hydrogen was under all circumstances to be avoided; it often conveyed the infection to another portion of the antrum and complicated the subsequent treatment.

DR. KELSEY

agreed with Dr. Jenkins as to peroxide of hydrogen, but could not believe that when the sinusitis was caused by an abscessed tooth it could be easily cured and the tooth preserved—he doubted, in fact, whether it could be done at all. Some people even pretended that it could be cured through the root of the tooth, which seemed to him absurd.

DR. YOUNGER

thought where the molar was sound the abstraction of a tooth should be avoided because it was possible to enter the antrum at the side of the tooth.

Dr. Jenkins

said there was no question whatever that an abscess of the antrum occasioned by a tooth could be treated by the roots of the tooth with absolute security and success. It had been done hundreds of times.

Dr. Kelsey

was a little surprised at the statement of Dr. Jenkins, but owing to Dr. Jenkins' experience was obliged to accept his judgment and admit that he himself was in the wrong.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held March 12, 1907, with the President, Dr. George W. Cook, in the chair.

Dr. Truman W. Brophy presented a case of "Removal of the Right Superior Maxillary Bone for a Giant Cell Sarcoma."

DISCUSSION.

Dr. C. N. Johnson:

There is one thing I desire to call attention to in this case, and that is a whitening of the membrane at the lower portion of the opening. I would like to ask Dr. Brophy what he thinks is the cause of that?

Dr. Brophy:

Possibly the pressure of the plate has had something to do with it.

Dr. Johnson:

I do not think it is that kind of irritation.

Dr. L. L. Davis:

The membrane is rather a whitish yellow, and I think it is due to a catarrhal discharge there.

Dr. Johnson:

I think it would be wise to instruct the patient's brother, Dr. Barber, to keep the membrane as clean as possible for a while, and also see that the plate is smooth, so that it may be free from causing irritation of the tissues.

There is only one feature I wish to call attention to in connection with this case, and it has been impressed upon me very forcibly in connection with the surgery that Dr. Brophy has done in the mouth, and that is, the avoidance of any external incision. I have seen some of the results of previous operations performed by Dr. Brophy in which there was very extensive removal of bone tissue from the mouth and jaws, and I have never seen a case yet where he has found it necessary to make an external incision. That is a very great triumph for oral surgery. It is something that general surgeons should pay more attention to than they have in the past. It has been the practice of most surgeons, I believe, to cut through the external tissues freely in making operations of this character; but I have seen many of Dr. Brophy's operations, some of them very extensive, without any disfigurement of the patient. I feel that if Dr. Brophy has done nothing else in oral surgery than that of establishing the possibility of performing these operations in that way, it is a very great triumph.

Dr. Elliott R. Carpenter:

I do not know anything about this subject. I simply rise to thank Dr. Brophy for the opportunity of seeing this patient and of noticing the excellent result he has obtained by this operation. The few operations of Dr. Brophy's I have seen have been clean, well performed, and the results obtained excellent. As Dr. Johnson has stated, this alone is a great object lesson of which the general surgeon should take cognizance. The avoidance of external incisions in dealing with tumors within the mouth or jaws is a thing that surgeons should strive for, so as not to disfigure the face.

Dr. J. G. Reid:

I have seen a number of these operations by surgeons which convinced me conclusively that there is no excuse for marring and disfiguring the human face divine by external incisions. Dr. Brophy presented a patient before this society some three or four years ago, where he removed a large tumor from a woman forty years of age. This operation was done wholly within the mouth, and if I remember rightly, the operation was much more extensive than in this case. Many of you will remember the case because he had a mouth-lamp here to view it, and it is certainly gratifying to us to know that Dr. Brophy continues to obtain such excellent results. The fact that this patient is getting well is evidence that the tumor has been thoroughly removed.

Dr. J. E. Hinkins:

I was fortunate enough to have seen the operation Dr. Brophy performed on this man at the Alumni clinic, and I was much gratified to see how nicely he did the operation without marring the face by an external incision. I have had the opportunity once or twice this winter to see some of our regular surgeons operate, and one in particular, who removed a fibroid growth from the lower jaw, but in so doing he made an external incision an inch and a half long. I am sure Dr. Brophy could have done the same operation without making an external incision.

I do not remember whether I reported a certain case before this society or not, but in 1904 one of my patients came to me in June with two deposits or growths back of the lower incisor teeth, and I thought in first looking at them they were syphilitic. I consulted with the family physician, who was a homeopath. Shortly after this she went to Iowa, and after she was there a little while she started for St. Louis to attend the Exposition. To be brief, she was operated on at once, and the tumor turned out to be a giant cell sarcoma, the first operation having been performed by this homeopathic surgeon. He removed four incisor teeth; took out about one-quarter of the lower jaw, leaving the cuspid teeth in. About a month later it was necessary for him to perform another operation. Accordingly he removed the cuspid teeth and one bicuspid. In about two months later he performed a third operation. The wound in the course of time healed up, and I made a partial lower plate or splint of rubber, attaching to the other teeth. Since then I have put in a gold splint, and there has been no recurrence of the disease. This surgeon made three operations before he succeeded in removing all of the diseased tissue. The splint extends from the second bicuspid on one side to the second bicuspid on the other in the lower jaw. The last operation was performed in January, 1905. The tissues in this patient's mouth do not look as healthy as those in the mouth of Dr. Brophy's patient. The tissue is rough in places where it is irritated and inflamed. There is no irritation from the plate or splint; I kept the edges well rounded and smooth, so that no irritation could be produced by it. But there is one singular thing about the case. The first time I put in a rubber plate I used red rubber, which proved to be poisonous to the tissue; but after applying black rubber, that acted nicely. The last plate I put in (gold) the teeth were attached with black rubber on the inside and pink rubber on the outside. The face of the patient was somewhat marred by the external incision which was made by the surgeon, and, it seems to me, if one of our dental surgeons had had charge of this case the result would have been much better, in that an external incision might have been avoided, consequently no disfiguration from the operation.

Dr. L. L. Davis:

It is certainly very gratifying to see the results of an operation like that which Dr. Brophy performed in this case. I remember a number of years ago of a patient being sent to me from Dakota for some trouble which a dentist there decided was an abscessed tooth which had discharged into the antrum and had caused inflammation. Just before the patient came to me a dentist in Huron, Dakota, took him to a physician who opened an abscess directly below the eye. The face was much swollen. The swelling projected fully an inch and a half beyond the normal line below the eye, and a little above this the physician in Huron had opened an abscess. When I saw the case I decided it was one I knew very little about. I, therefore, sent the patient to Dr. Harlan. In the meantime some relative had gotten hold of the patient and took him to a well known surgeon in this city. Later I went to the Mercy Hospital and saw this surgeon operate on this man, and it was one of the dirtiest, most disagreeable, and disfiguring operations I ever saw in my life. I thought I had seen some terrible and mutilating operations performed at Ann Arbor, but this operation surpassed them all. He took a large gouge, ran it along the wing of the nose, and another one across the region of the eye, and turned a large flap back. It became necessary for him to use sponges to prevent blood from entering the throat. He scooped out all the lower floor of the orbit to the intermaxillary bone, and the entire palatal portion of the maxilla on the affected side. The patient died a few hours after the operation. It is refreshing and gratifying to see an operation such as this performed in the way Dr. Brophy has described. I believe external incisions should be avoided, if possible, in the surgery of the mouth and jaw.

In Dr. Brophy's case I should like to know just what the condition was before a diagnosis was made. Perhaps Dr. Barber, the patient's brother, can answer my question, as he has seen the case from time to time. I would like him to describe the condition, so that it may be possible for us once in a while to recognize something of this kind and refer it to the proper authority or surgeon for operation before the tumor reaches any such size as it attained in this case before operation. It is certainly a pretty piece of surgical work, and after seeing this case it is a revelation to me as to what can be done in a surgical way through a small opening.

Dr. B. D. Barber:

The case of my brother was brought to my notice about a year and a half ago, when the tumor did not show the size that it subsequently attained when the case came under the observation of Dr. Brophy, who, I think, will bear me out in saying that the growth was small and extended from the right side of the back part of the mouth to near the soft palate, and undoubtedly arose from a molar. The growth was as large as my little finger, and seemed to be, as near as I could make out, a little sac that extended across at the beginning of the soft palate. My recollection is that at the time Dr. Brophy thought it was an aneurysm, but it proved to be a sarcoma. The case was operated on and healing took place very nicely.

About three or four months ago my brother wrote me that he was having trouble with his mouth. I immediately went down to La Porte, Indiana, and looked into the case. He had two or three physicians and one or two dentists examine him, but neither of whom expressed any desire to handle the case, and suggested that he better go to Chicago to see me. I referred him to Dr. Brophy, who operated on him, and the result you have seen tonight. There is no one more gratified at the result obtained in this case than I am, owing to the fact that he is my own brother.

I would like to say a word or two in regard to the plate I made and inserted in this case. I made the plate in a very short time, and regard it as only a temporary one, for as soon as the wound has healed thoroughly and the soreness around the malar bone has disappeared, I shall put in something that is more permanent. I am satisfied that in a case of this kind, where so much of the maxillary bone has been removed, it is necessary to put in a plate which will be serviceable. I think there is a little too much weight on that side at present for the other teeth to stand. The teeth on the opposite side of the mouth are not in a good condition; they were covered with deposits, and one or two teeth are marked with pyorrhea. I have advised that these be taken out. Later I want to put in an aluminum plate, as I think it will be a good thing to make the plate as light as possible. I have also advised that his teeth and gums be put in a healthy condition and I have admonished him to keep them so. By grinding those teeth and banding them, with an aluminum plate, I believe he is going to get along very well for many years. It is evident to me that nothing else can be done if he should lose those teeth on the opposite side of the mouth.

It is hardly necessary for me to say that I am very grateful to Dr Brophy for what he has done in my brother's case. I remember some years ago, I think it was in 1891, when the Chicago College of Dental Surgery was located at Michigan avenue and Randolph street, of assisting Dr. Brophy one day in a similar case of a woman, about forty years old. At that time the operation consumed most of the afternoon. He made an incision through the median line of the nose; I held the patient's face and administered a little ether occasionally, and before we got through with the case I had all I wanted. I feel grateful to Dr. Brophy for having made this operation through the mouth.

I wish to thank the members of the society for being invited to attend this meeting, as it has been a great pleasure to meet with you.

Dr. J. H. Woolley:

I know very little about the surgical aspect of this case. After seeing the excellent result which Dr. Brophy has obtained in this case, the dental profession ought to feel that there are professional men in our midst who can successfully perform such operations. It seems to me we have witnessed a wonderful evolution in the surgery of the mouth in recent times, and in this connection, if it is not a digression from the subject, I would like to ask Dr. Brophy what he thinks was the cause of the condition of General Grant's mouth. As I understood it at the time, the condition of his mouth was occasioned by a jagged tooth. This in turn caused a diseased condition of the gums, and possibly the condition was sarcomatous in origin. I would like to ask Dr. Brophy whether those conditions existing at that time could have been cured by the oral surgeon of that day, or whether the oral surgeon has so far advanced in the diagnosis of such cases that the present oral surgeon is able to restore those diseased conditions to a normal state?

We are under a great obligation to Dr. Brophy. I think that he is building better than he knows, and with it all he is so modest that it reminds me of the case of Darwin, the great scientist, in speaking to Carlisle, the great writer said: "And Carlisle came to see me," although Carlisle at that time did not occupy as great a position as did Darwin. And so, Dr. Brophy, it recalls to my mind a thought that has been often expressed, namely, he that is great is he that serves, and he that serves confers a boon on suffering humonity that we all should be grateful for.

Dr. J. W. Wassall:

I have not had the pleasure of seeing many of Dr. Brophy's operations, but I have seen enough of them and know enough about him to realize that he is a man who is eminent in oral surgery; he is a man who is looked up to by surgeons not only of this city and this country but of the world, and we, as Dr. Woolley has said, hardly realize what a great influence he is exercising in oral surgery. The case that we have seen tonight is a good example of his work. It is the sort of work he has stood for—operating without disfiguring. I have seen a great deal of surgery of the face where there has been, it seemed to me at the time, unwarranted cutting externally, with great resultant disfiguration. The dentist should be on the alert to recognize these tumors, malignant or benign, which occur in the mouth, because he is in a position as the family dentist to first see them. I had such a case come under my observation within six months in a little girl of five. Her case was not well marked. The family physician had seen the child, and the case was referred to me. There was a temporary lower molar that was badly carious and ragged, and by the side of it was a small fungous growth. So far as I could tell, this was not dissimilar from any other fungous growth which would come from the irritation of a ragged tooth edge, and yet it looked suspicious. I hoped it would get all right after the extraction of the ragged tooth, which was then proceeded with. I instructed the parents to bring the child back at the end of two weeks, after healing had taken place as a result of the extraction, and there was the little growth there just the same; if anything it was a little larger. The diagnosis from the pathological library showed it to be a giant-cell sarcoma of a suspicious nature.

The case was operated on. Quite a section of the process was removed, and since the operation there has been no return of the disease.

Dr. George W. Cook:

I feel it is hardly worth while for me to say more than that I appreciate the skill exercised and displayed in an operation of this character. I have seen general surgeons do many of these operations, more especially the late Dr. Christian Fenger, whom you all know stood very high as a surgeon. But as a mechanical operator he was about as bunglesome as any of the rest of them.

I saw a case of sarcoma the origin of which was at the root of the first bicuspid. The tooth was pulpless. The pulp had been removed, the tooth filled, and this growth developed apparently at the apical end of the root. A physician sent the case to a dentist to have the tooth extracted, but as this dentist did not do much extracting, he sent the case to Dr. Slonaker before his death. Dr. Slonaker recognized that the case was one that he ought not to bother with, and so he advised the patient to see a surgeon. The girl was Swedish. She had a little money, and the people she was living with advised her to go to the dispensary, and as a result she fell into the hands of the Philistines An operation was performed through an external incision, and, of course, great disfigurement followed. This proved to be a melanotic sarcoma, which is a more malignant form of tumor than sarcoma. The removal of the tumor, aside from the disfigurement, was a success. The first plate I made myself; the last one, made by Dr. Jones, was made about two years ago. About a year ago we learned that the woman died from carcinoma of the uterus. An operation was performed; the uterus removed, and she died soon after the operation. But there was no return of the melanotic sarcoma. The case was especially interesting from the standpoint that the tumor in the jaw did not return.

I differ from Dr. Brophy as to the origin of these tumors. From my standpoint, this is an interesting subject, and one that we ought as dentists study more carefully. We frequently see these cases. A small growth appears in the mouth of a patient; we notice it, and we treat it with indifference; we do not instruct the patient early enough to have the case attended to. Some of these cases are very malignant from start to finish. Others, if operated on early, with proper care and attention, will remain well for many years.

The theories as to the growth of tumors are numerous, and all of them have an interesting phase connected with them. But they are not specially interesting for our discussion this evening.

What Dr. Brophy has done in this case should be done in all cases, in my opinion, namely, to preserve the external tissues as much as possible. And that is just what the average general surgeon does not do. As Dr. Johnson has said, if Dr. Brophy has done nothing else that we can call him great for, he has persistently pounded on the one point to preserve the external tissues as much as possible. That will do the dental profession of this city more good twenty-five years from now than it will today. That is one of the things we have to recognize, and if there is any one thing we can be thankful for, it is that we have skilled oral surgeons in this country. There is no surgeon who can operate as well as the dentist in the mouth, for he is familiar with operations in that region. And what surprises me is that people go to general surgeons for these operations as much as they do, and even dentists send such patients many times to general surgeons when they should be sent to men in our profession who are capable of doing this special work.

I want to thank Dr. Brophy for bringing this patient here tonight, and for presenting the case in the admirable manner he has.

Dr. L. L. Davis:

Just a word or two more along the line of the remarks made by Dr. Cook before the essayist closes the discussion.

Dr. Cook said that some of these tumors are benign, while others are very malignant, and some of those that are benign in the beginning may become malignant. Within the last six months I have had experience of that kind occur in my practicce.

The husband of one of my patients, whom I had never seen before, came into my office one day and said he was under the care of a very prominent Jewish physician or surgeon, who recommended an operation on his tongue; but his wife advised him to see a dentist. He came to see me. He ran out his tongue, and on the under side I saw a small warty growth; one might call it a cauliflower growth, but it looked more like a warty growth. I immediately looked for the cause of the irritation. He had not cleaned his teeth very thoroughly, and did not take good care of them, and I found deposits on the first and second lower molars on that side and these teeth were very rough along the edge of the gums. The gums were ragged and sore; and the rough deposit, irritating the lower part of the tongue, caused in my judgment this warty growth. That man was ready to have an operation performed; he said it was going to cost him five hundred dollars to have it done. The surgeon insisted that the tumor was malignant; that he was liable to lose his whole tongue if the growth was not removed at once. I removed the tartar from the teeth on that tide, touched the growth with acetic acid three or four times, so that very soon the tongue was just as smooth as mine is now.

Dr. George W. Cook:

I saw a patient who had been treated for some time by a physician, and the man was ready to go to a hospital to have the ramus of the lower jaw removed because of a supposed carcinomatous or sarcomatous growth there. The physician had been cauterizing it, and a dentist, who happened to get hold of the case, asked me to see it. There was a sore, sensitive place in there. The patient had seen two or three eminent surgeons who advised the removal of a section of the growth. We probed around, found the root of the lower molar, and took it out. The patient recovered and had no further trouble. Here was a case where the patient in two days more would have gone to the hospital and had the ramus of the lower jaw removed, when in reality it was nothing but the root of a tooth that was broken off and left there that was causing the trouble. There was some thickening, some irritation, and some inflammation, but it was easy to find the root with a probe

Dr. B. D. Barber:

A good many years ago, when I began to practice dentistry, a patient came to me, a German, an educated man, who had been in this country but a short time. He had a place in his neck below his collar where pus was oozing out. He said he had had a great deal of trouble with it. He had been treated by one or two good physicians in Germany; it would heal up and then break out again, and so he would go from one physician to another. He had been treated by two or three physicians in this country without much benefit. He told me that some years ago he had a tooth removed on that side, and had wondered whether it had anything to do with the present trouble. He did not suppose, however, that it did. He had lost all his molar teeth; but had one or two bicuspids left, and the gums looked natural. Healing had taken place, so that one could not see anything there. But upon closer examination I found the gums were a little flabby, and made up my mind that I would inject cocaine into the gum, take a bistoury, and open the gum for an inch and a quarter. This I did. I removed two or three roots. I took my syringe, filled it with an antiseptic, forced it down and held cotton on it so that the antiseptic solution would not get out. I then syringed pus out of his neck in considerable quantity. After this he had no trouble.

Dr. Brophy (closing the discussion):

I appreciate the consideration and attention which you have given my short report of this case. It can hardly be dignified as a paper.

With reference to Dr. Cook's remarks, I tried to follow him closely, but failed to compehend exactly wherein he differed from me in regard to the cause of these tumors. At the outset, if I understood him correctly, he said he differed from me with regard to the cause of these tumors, but did not point out that difference.

Dr. Cook:

I do not recall saying that I differed from you as to the origin of these tumors.

Dr. Brophy (resuming):

I always feel, when a subject of this nature comes up, like saying a word or two relative to the source of the inspiration, if it is such, that led me to do this work. It has been my good fortune to have lived among men who have been great in their achievements, and by their greatness they have extended their knowledge to others, and I have been able to acquire information from those men. When I look back on the time that those men lived, I do not think I could have picked any other time in the centuries more desirable in which to live than the time I have lived. I have lived in a time when we had a Garretson, a man who had a reputation which will live for all time, for he created a field for oral surgeons. It has been my good fortune to live in that period of the world when the father of American surgery was in his prime, and it has been my good fortune to have been his student and to have listened to his teachings with profit. I refer to Samuel D. Gross, the father of American surgery. It was my good fortune also to have lived at the time of Pancoast, the Senior, whose works on general surgery are today among the best of our textbooks; and another equally famous man, who cared for the late President Garfield in his days of suffering—D. Hayes Agnew, another great American surgeon and author. Then, when we come to our day, it was enough for professional men of ambition to have lived in the days of Nicholas Senn and to have known him as I know him, and to feel the inspiration of his presence always in the field of pathology and surgery. I do not believe there is a man living who appreciates more highly than I do the magnificent, lovable Senn; and when the history of American surgery shall have been written, thirty or forty years hence, perhaps hundreds of years hence, the unbiased writer will place the name of Senn among the foremost surgeons of the world and of his time. When the students in the centuries to come look over the ablest treatise on the subject of tumors, they will have to get a volume of Nicholas Senn. I could talk all night about that man and the wonderful life he has lived, and of his remarkable achievements. But I fear I am digressing from the subject of the evening. I could not, however, do what I am doing in my humble way had it not been for the lives of those men whose names I have mentioned. Their influence will guide me all the time. I have said to students and others in my surgical amphitheatre, There is the portrait of Garretson. I keep it there as an inspiration. I think every man feels, who has feelings, the presence of the influence of those great men who are here no longer. We must feel it. I have often thought, as Dr. Atkinson used to say, they are not far away. They are here.

If I had had the opportunities of our college students of today to do more laboratory work when I was a student, how grateful I would be. Those who come along later will more clearly understand the intricacies of these growths than we have been able to gather in the years that have passed. I have quoted from Dr. Senn's book, showing that the teachings of Cohnheim with regard to tumors stand today, because modern theories as to the origin of tumors from a bacteriological point of view, cannot stand until they are better substantiated.

Many of you will doubtless remember the late Dr. John B. Hamilton, formerly surgeon-general of the United States Marine Service, and later a member of the faculty of Rush Medical College, and finally head of the Hospital for the Insane at Elgin. To show what influence Senn had over a man, I may state that when Hamilton, a few days before his death, had Dr. Freeman, an interne of Presbyterian College, to take care of him. One day while Freeman was sitting at the bedside, Dr. Hamilton said to him, "Freeman you have never said anything to me that was misleading; you have always been frank. I want you to be frank with me now, as you always have been. Am I going to get well?" It was a hard place to put a young man, who knew all the while what the outcome would be. He said, "Dr. Hamilton, I do not like to answer that question, but you ask me to be frank with you. No, you are not going to get well." Just then the nurse announced that Dr. Senn had come, and Dr. Hamilton exclaimed, "Freeman, I will get well; Senn is here." So it is with those whom we highly regard. We feel their presence is capable of accomplishing so much.

Answering the question asked by Dr. Woolley, if it were answered as fully as it should be, it would take too long.

The growths that affected two great men almost at the same time in history, General Grant and the Crown Prince of Germany, Frederick, were of the epithelial type. The tumor I have dealt with this evening was of the connective tissue type. I would like to recommend to all of you Dr. Senn's work on tumors. You will find it intensely interesting; it is even better than a drama as a means of getting out of it those things which we all desire, and one can hardly estimate the good that may be imparted by a thorough perusal of this book. The connective tissue group of tumors is different from those of epithelial origin. Then, too, the connective tissue growths are not as malignant, generally speaking, as those of an epithelial or carcinomatous character. Sarcoma is a fleshy tumor; carcinoma an epithelial tumor. The General and the Crown Prince of Germany had epithelial tumors, both of which were of dental origin, as the exciting cause of each was a bad condition of the teeth. I knew the man who had charge of General Grant's case, Dr. Frank Abbott, of New York; also Dr. Thomas Evans, who had charge of the Crown Prince's case, and from the mouths of each of these men I obtained a history of the growths that terminated the lives of their patients. In each instance there was irritation set up by the side of a third molar tooth, and continuous smoking on the part of General Grant led to proliferation of epithelial cells and irritation of them. Carious teeth, with broken, rough edges, caused a proliferation of cells by continuous irritation, and the extension of inflammation to the pharynx with the development of the tumor terminated his life. The same thing practically occurred in the case of the Crown Prince.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price $1.00 a year including postage, to all parts of the United States, its possessions and Cuba and Mexico. Canada, $1.40. All other countries $1.75 a year.

EDITORIAL.

1908.

The present number of THE DENTAL REVIEW rounds out the volume for 1907, and if we wished to review the year we could find many things for congratulation and satisfaction. But we are more inclined to look forward than to look back, and so our mind at the close of the year is more on 1908 than on 1907, which is the only real way to progress. We may revere the past, but we cannot improve it. The future is our golden opportunity, and with it we can do almost as we wish. So with the DENTAL REVIEW we are looking forward to greater achievement in the year to come than we have ever attained. We have much good matter in hand for publication with the promise of much more. The various departments will be maintained, and one more added. It is our purpose through the year to publish a series of articles on the dental colleges of this country, containing a cut of each college building, with the number of students the college has graduated since its organization, and other data connected with it. We predict that this series will prove of the greatest interest to the profession.

The editor makes one personal promise. In the past the Editor's Desk department has sometimes been omitted to make room for other matter, but the readers seem to have grown in the habit of looking for it and there is usually a gentle protest when it is missing. In view of this it will appear each month during the year with matter already prepared for it. This matter is as varied as the moods of a woman's mind, though we can scarcely hope that it will be quite as interesting.

And now as the season of Yule tide and good cheer approaches let us all get a little closer together in unity of sentiment. The common brotherhood of man can become an established fact if we all think so, and it is becoming nearer a fact each year. This is a fundamental truth which the prating of the average pessimist cannot gainsay.

The editor takes this occasion to send a word of greeting to all his colleagues in the journalistic field. To those who have entered the field during the past year he extends a most cordial welcome, with the hope that they may find the work very pleasant.

He also has a word of thanks to the publishers of this journal for the uniform courtesy and loyal support accorded him since his acceptance of the editorial chair six years ago. He feels himself under deep obligation to them in many ways, which brings up a subject worth mentioning at this time. Much has been written during the past year—in fact much is written every year—about the so-called thraldom of trade journalism, and the utopian deliverance promised by independent journalism. It is safe to say that no one will welcome more sincerely any movement tending to elevate the standard of dental journalism than will the men who today are conducting journals throughout the land, but some of them must perforce be made to smile at the charges occasionally made that trade interests dictate the editorial policy of the journals published by dental supply houses. The editor of the DENTAL REVIEW can only give his personal experience in the matter, which is this: Since January, 1902, seventy-two numbers of this journal have been issued under his editorial management, which makes approximately 7,000 pages of printed matter. In all that mass of material not one line has ever been printed at the suggestion of the publishers, nor have they in any manner whatever intimated what should or should not go in the reading matter of the magazine. They have never tried in the slightest degree to dictate the policy of the journal. More than this they never know what is going in the journal till it appears in print. The head office of H. D. Justi & Son is in Philadelphia, and the DENTAL REVIEW is issued in Chicago. The house never sees a line that goes into the magazine—and never asks to see it—till they receive their copy of the journal mailed at the same time that the issue is regularly mailed to our readers. They have not the least idea, for instance, that this editorial is being written, but it has seemed to the editor that the facts should be stated. It may therefore as well be known once for all that the mistakes which creep into this magazine are the mistakes of the editor and not the publishers, and that if there is anything wrong with the policy it is his fault and not theirs. All the publishers do is to pay the bills, which we deem a very important factor in conducting a successful dental journal. And we have an idea that this is about all the publishers of other dental journals do.

THE GUERINI HISTORY.

It has long been known to the profession that Dr. Vincenzo Guerini of Naples, Italy, has prepared a history of the dental profession down to the early days of the nineteenth century, and that he has placed the manuscript at the disposal of the National Dental Association with the idea of having it published. Those who have examined the work pronounce it altogether satisfactory, and the generosity of Dr. Guerini in turning it over to America should stimulate the profession here to see that it is brought out in a creditable manner. In order to defray the actual expenses of publication it became necessary to secure in advance a sufficient subscription list to ensure the publishers, and this list is not yet quite full. The cost of the volume will be $5.00. The chairman of the Committee on History, in whose hands the matter is placed, is Dr. Charles McManus, 80 Pratt street, Hartford, Conn. Those of our readers who have not yet subscribed should at once write Dr. McManus and have their names placed on the list.

It should never be said that here in America where dentistry is advancing so rapidly a movement of this kind should be allowed to drag for want of a few more subscriptions. Write at once and let us see the work under way.

DEATH OF HON. S. W. McINNIS, D. D. S., L. D. S., M. P. P.

On November 4, 1907, there died at Brandon, Manitoba, one of the foremost dentists of Canada, in the person of Hon. S. W. McInnis. In fact the position of Dr. McInnis was unique in the history of the profession the world over. He entered parliament in 1899, and soon became a leading figure in the politics of his province.

He was re-elected at each successive election, always with an increasing majority. For a time in 1902 he acted as speaker of the legislature, and when later a vacancy occurred in the cabinet he was selected by the Premier for the portfolio of provincial secretary. In addition to this in August last he was required to assume the important duties of minister of education, which various offices made him one of the most prominent and influential men of his Province. He was also president of the Canadian Dental Association, and vice-president of the Dominion Dental Council, an organization which, to a large degree, owed its existence to his genius.

Dentistry has seldom developed a man of such versatile talent as Dr. McInnis, or one who brought its needs so vividly before the people. At the time of his death he had under way many philanthropic plans for the betterment of the people of his Province, and his death is a distinct loss to the community as well as to the profession. He was only forty-two, and the future promised great things for him. The cause of death was appendicitis.

The editor of the DENTAL REVIEW wishes to pay his personal tribute to the memory of his deceased friend. He had known him well for many years and had always watched his career with increasing interest and pride. It was a source of profound sorrow to learn the sad intelligence, and he hereby expresses his sincere sympathy for the bereaved widow, and the deceased minister's immediate family and friends.

THE EDITOR'S DESK.

A LITTLE GIRL.

I know a little girl who has been assistant in one dental office continuously for nearly twenty-three years. You will probably say that this cannot be—that if she has been in an office for that length of time she can no longer be a little girl, but there you are mistaken. There are some people who are superior to time. The years have no effect on them except to make them better, purer, broader minded, and altogether more efficient. These people are most happy, and let me tell you that every individual has it in his power to secure this kind of happiness. It is all a matter of faithful service—service to an employer, to employees—to patients, to clients, to one's family, to humanity. If every boy and girl could be taught this sublime lesson and live up to it the world would be infinitely better. There would hardly be need for any other gospel. The gospel of loving service, of work, of devotion to duty though the heavens fall—which they won't—is the one to regenerate the world.

And this little girl has that gospel, and she practices it every day, though she never preaches to any one. There is a deal of difference between practicing and preaching—at least there usually is. I pin my faith to the practitioners.

The most pronounced characteristic of this little girl's service is her loyalty. She is true as steel to the interests of her employer, and no one ever did him a wrong that she did not try to right. I used the word "employer," but that was a mistake. No one employs this little girl. She simply helps the dentist conduct his practice, and there is a community of interest in that office which has long since broken down all the barriers of business and developed a spirit of reciprocal service which is most delightful. The idea of the dentist's interests not being her interests never enters her head, and she is more alive to his welfare than he is himself. Nor does her loyalty stop here. Of course I have, fortunately, never seen the matter tested, but I honestly believe she would lay down her life for any member of the dentist's family. His children have always been her especial pets, and in turn they would defend her at the drop of the hat, or even before the hat had a chance to drop.

Such then is this little girl's position. In all those twenty-three years there has never a harsh or impatient word passed between her and the dentist, and there never will. The only difference of opinion has been about salary and vacation—two things which cause so much disturbance in the business world. The dentist has, from time to time, raised her salary, but always under protest from the little girl. She has the unique idea that she is getting enough, when as a matter of fact, she wouldn't get enough if she had all the dentist ever earned. Such service as hers cannot be paid for in coin of the realm, though it has often been a sore trial to the dentist to make her accept a modicum of what he thought she ought to have. As for vacations she absolutely spurns them. When remonstrated with in the matter and urged to run away some place for a rest, she simply smiles a bit indulgently, but ends by having her own way. Her theory is probably correct that the office could not get along very well without her, but the astounding thing is that she claims to take more comfort there than any place. And yet, after all, is not this only another proof of the fact that wherever duty is best performed there is the greatest happiness?

Why am I writing all this? Not, surely, to parade a personal matter before the world, but to point a moral. This little girl's example would do well for the great mass of humanity to go by. Her creed is so simple and so effective. It is a "sane Fourth" creed, not much noise about it, but plenty of enthusiasm. It consists chiefly of fidelity, patience, rock-bottom honesty, cheerfulness, modesty, helpfulness, generosity, loyalty and—more loyalty.

I have seen one of the most noted women in the world pin an ornament on the little girl's waist in token of her appreciation and esteem; I have seen the highest cultured and most refined show her unstinted deference and respect, but I never saw the little girl's head turned for a single instant. That's brain power for you. It is evidence of strength of character to be able to withstand the subtle influence of flattery, and the truly great in the world are always modest. This little girl is one of the truly great. She has never betrayed a trust and has always lived up to the highest of her possibilities. That epitomizes greatness, if I know what greatness is.

If you would like to see this little girl, call at my office. You will always find her there.

DOMESTIC CORRESPONDENCE.

To the Editor of THE DENTAL REVIEW:

For fear some of the dentists of the state may forget the Northern Illinois Dental Society, I take the liberty to inform them that the twenty-first annual meeting was held in Rockford, Oct. 16 and 17, and like all its predecessors, was up to the standard of excellence in papers, discussions and clinics. We had papers on Prosthetic Dentistry, a subject that to my mind has been sadly neglected at all Dental meetings. At this society all participate and nothing occurs to make them afraid. We had papers on Dental Education, Dental Jurisprudence, Operative Dentistry, etc.; all were discussed freely and ably. Over one hundred were present, the largest attendance we have ever had, showing that we are growing in quantity as well as quality of our work. Ninety-four members were present and paid their dues to October, 1908. We had a score of visitors and they enjoyed the good things with us.

We meet in Freeport next year. All dentists in the northern part of the state should be with us at every meeting. Come and we will do you good. Truly, JAMES W. CORMANY.

NEW YORK LETTER.

My Dear Mr. Editor:

The First District Dental Society had its second meeting of the season on Tuesday evening, the 12th instant. Dr. A. W. Harlan read a paper on "The Inlay in Its Relation to Living Pulps and Pulpless Teeth."

Dr. Harlan's paper was quite comprehensive touching as it did on many subjects. He said that operative dentistry is being so gradually and certainly revolutionized in consequence of the wide use of the inlay that we must concern ourselves about the effect of this radical departure from the old time filling material. Then he spoke of the change in cavity preparation, which he regards as a decided advantage over the old method of grooving and pitting for fillings of cohesive gold. Dr. Harlan expressed himself as heartily in favor of the inlay process, but deplored the fact that we were obliged to depend upon cements for retaining them.

The pulp was his constant allusion throughout the paper. One must be very cautious not to approach it too closely in preparation of extensive cavities. "It is far better to remove the pulp entire before making the inlay when in doubt than to leave it to die and cause needless destruction of tooth substance and a probably discolored and unsightly crown." The doctor laid down some laws of importance, saying the color of inlays should be of first importance. The porcelain should be so manipulated that its texture is firm and uniform. Friable edges are to be avoided, and when the filling is cemented absolute dryness should be secured at all hazards. The latter point he deems very important and he also brought out a new point. To further insure the retention of inlays he recommends that just before setting they be heated to about the temperature of the body, say 105° Fahr. Dr. Harlan contends that many failures of union of inlay to cavity occur because of oversight of this point. A variation of 25 or 30 degrees exists when it should not be more than 5. He spoke about abutment inlays for the attachment of bridges, which in his opinion are suitable for only a few cases. His choice would be to envelop the whole crown.

The introduction of the inlay into operative dentistry will be a blessing in disguise to humanity, as it will bring about uniformity in the treatment and filling of roots." He pointed out the results of placing large inlays in molars so as to preclude the proper access to the roots in case of trouble.

In reference to the treatment of roots he said: "Nothing will compensate for lack of cleanliness of root canals, and complete disinfection, and at least thoroughness in filling roots."

Dr. Harlan said it was a misfortune that there was no positive system of root filling in vogue, and that men are satisfied to fill roots with one of a dozen materials, trusting to luck and the good condition of the patient to prevent abscesses.

On the subject of disinfection and root filling he expressed his views as follows:

"First, the root must be made surgically clean and free from pulp debris. Second, all poisons must be diluted, washed out or rendered inert. The roots should be dried and filled mechanically with some form of gutta percha which will adhere to the walls of the roots."

Dr. LeRoy opened the discussion of Dr. Harlan's paper and was followed by Dr. Van Woert, Dr. Perry, Dr. Meyer, Dr. Shields, and Dr. W. W. Walker.

The October meeting of the New York Institute of Dental Technique was held at the Chelsea, on West Twenty-third street, at 5 o'clock p. m. A demonstration of "The Technique of the Removal of Tartar Formations from the Roots of Teeth" was given by Dr. R. G. Hutchinson, Jr., of Brooklyn. By the way, Dr. Hutchinson is the President of the Second District (Brooklyn) Dental Society and bids fair to make a most excellent showing.

As usual, the society had its regular dinner following Dr. Hutchinson's demonstration, after which Dr. James Edward Power of Providence, R. I., read a paper on "The Treatment of Fractured Jaws," which was profusely illustrated by stereopticon, showing progressive steps in treatment. The discussion was participated in by

Drs. Robert G. Morris, G. Lenox Curtis, Harold S. Vaughn and others.

Dr. Vaughn, referring to the fact that Dr. Power's paper dealt chiefly with the cap splint, spoke at some length of cases where he thought the interdental splint, in conjunction with the skull cap and chin piece, was more likely to be indicated. He also advised the use frequently of hydrogen peroxide, combined with an antiseptic solution containing formalin, for cleanliness. Dr. G. Lenox Curtis said that he could not agree with the essayist that the dentist's skill in this work is at all adequate as probably less than 5 per cent could successfully treat other than the simplest cases, said this was a practice entirely apart from dentistry other than making the splint. He said the essayist had omitted one cause of fracture, viz., using too much force in extracting teeth, and spoke of several cases which had come under his notice where this had occurred and permanent deformity followed because the dentist assumed the care of the case instead of calling competent help. He advised the use of electrozone as a douche for the wounded parts, and objected to the use of the ice bag except possibly when pus was present. In taking impression for interdental splints he advised anesthetizing the patient, so there would be no pain, and a much more accurate impression would be obtained.

Dr. Robert G. Morris was unable to be present, but sent a synopsis of his comments on the paper which he had read.

Referring to Dr. Power's statement that "ice bags should be used with caution," he said he would underscore that sentiment. "An ice bag is a doubled-edged sword, if we may apply that metaphor to anything so blunt. Because of its interference with the hyperemia of repair, it is apt to cause an undue amount of suffering." He advised caution in regard to the strength of the mouth wash, as he had observed several instances of injury to the epithelium caused by the strong wash, which condition had been ascribed to infection alone.

He thought it was always best to have an X-ray picture of the fracture when possible. The courts demand it, and one will often be surprised to find that the line of fracture is different from that which is pictured in the mind.

The November meeting of the Second District Dental Society (Brooklyn) occurred on the evening of the 11th instant. The new President, Dr. R. G. Hutchinson, Jr., presided.

The question of co-operation with the Board of Education and the Board of Health in regard to the care of the teeth of public school children seems to be "in the air" this winter. After much discussion in regard to the matter a committee was appointed to confer with some other Brooklyn organizations along this line.

The essayist of the evening was Dr. Henry H. Tompkins of Utica, N. Y., who presented a paper entitled "The Construction of Porcelain Crowns Without the Use of Models." His paper was well illustrated with diagrams or charts and many models, one being a huge manikin of a root, which showed every clearly how he would form the end before burnishing the platinum over it. Without these models and charts a comprehensive idea of his paper cannot be given. He is strongly opposed to the use of bands at all, and the principal feature of his work seemed to lie in peculiar shaping of the end of the root, which he claimed gave greater rigidity than a band.

The discussion was opened by Dr. John A. Schmidt of Brooklyn and participated in by a large number of those present, in the main agreeing with the essayist's idea that bands should be avoided.

The Central Dental Association of Northern New Jersey has returned to its old meeting place, Simon Davis', 943 Broad street, Newark, and its dinner there on the evening of October 21 was like old times.

Before the paper of the evening was read Dr. Charles A. Meeker called attention to the fact that several local dental societies had been formed within the last year in different parts of the state, and that New Jersey, though only a small state, was well to the front in respect to the number and membership of its local organizations.

Dr. R. M. Sanger then paid a feeling tribute to the memory of the late Dr. John I. Hart and a committee was appointed to take special action. Dr. Hart was very fond of and always welcome at the C. D. A.

The essayist of the evening, Dr. James Edward Power of Providence, R. I., then presented a paper on "Ideals in Professional Life."

Rarely have we listened to a more scholarly address. It was replete with reminders of those who had striven to attain ideals and examples for us to follow. He inveighed against wealth as being the acme of success. Said that skill was of no value without broad knowledge.

Dr. B. F. Luckey, of Paterson, said he had never listened to such a beautiful presentation of a subject before, said his ideal was to be a dentist and the best in the land.

Dr. H. S. Sutphen, of Newark, spoke of the difference between the professional man and the layman as to what constitutes success in life. The professional man looks to the betterment of mankind—the layman or business man wants to know how much money there is in it.

Dr. R. M. Sanger complimented the essayist on his beautiful thoughts, said we should each make a personal application.

Dr. C. A. Meeker thought such papers would go a great way toward the idea of all dentists being in one grand body, to raise each one up and to eliminate fakirs.

The New York Institute of Stomatology had a very interesting meeting on the evening of November 8—the essayist of the evening being Dr. John J. Cronin, of the New York Board of Health, on the subject "The Physical Defects of School Children." At great length he described the work he and his associates had been doing in the last two or three years in helping those school children who had defective vision, enlarged tonsils, adenoid growths, aching teeth, etc., to have these things remedied. He described the manner in which examinations were made, and cards made out and sent the parents so the children could be taken where the parents desired. His paper was illustrated by stereopticon, showing among other things several pictures of "before and after." He said that the improvement in children was marvelous, those who were willful or indifferent and dunce-like becoming the brightest and smartest in the classes.

Dr. W. C. Noble of Montclair, N. J., who has been foremost in the campaign for pure milk in that vicinity; Dr. W. Sobier Bryant of New York, Dr. Walter Stewart Cornell of the University of Pennsylvania, Rev. Mr. Travers, Dr. Hayden Emerson of New York, Dr. Fishe of New York, Dr. E. A. Bogue of New York, Dr. H. Clay Ferris of Brooklyn and Dr. Hyatt of Brooklyn, participated in the discussion.

Dr. Noble spoke of the importance of this work to the community in which we live, and of the hostility of the community, frequently.

Dr. Bryant said the results of Dr. Cronin's work speak for him highly.

Dr. Cornell emphasized the need of an appropriation for efficient dental work along these lines.

Dr. Hayden Emerson spoke of his examinations this summer among children at Sea Breeze home, at Coney Island, examining the teeth of over two thousand during the summer. He found of those under fifteen years of age eighty-one and two-tenths per cent had decayed teeth. In only the rarest instances was there any cleansing of the teeth. He thought much would have to be done toward correcting the tenement house children's teeth before the physicians would be able to accomplish much, but that intelligent diet and clean mouths worked wonders.

Dr. Fishe thought the Board of Education should do more and not leave it, as now, almost entirely to the Board of Health.

Dr. Ferris reported his examination of children in the truant schools, which was of much the same character and in result as those of Dr. Cronin.

Dr. Hyatt spoke of an examination of six hundred (600) pupils, of whom only thirteen needed nothing done.

This question of the care of children's teeth, no matter in what walk of life, seems to be likely to attract much attention this winter here in the east. THE BURROUGHS.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

A Good Solvent for Cocaine:—In pulp anesthesia use a 10 per cent solution of menthol to dissolve your cocaine. It is the best solvent I have found out of a dozen or more I have tried.—*H. E. Latcham, Grand Junction, Iowa.*

Articulating Paper:—Instead of using carbon articulating paper which is extensively employed to locate the high points on masticating surfaces of artificial teeth, I use a piece of typewriter ribbon which has given better results.—*W. H. Taggart, Chicago.*

Seal Your Medicines in Teeth With Cement:—In regard to sealing in any medicine with gutta percha, you can seal it in, but the patient will go to the table and unseal it. If there is danger of forcing gas and irritating the apical tissue by pressure, when the cement is hard enough, sealed properly, it is rigid enough to withstand mastication, the patient biting upon gutta percha will force something through a lot worse.—*W. H. G. Logan, Chicago.*

The Horn Mallet:—The horn mallet as it is placed on the market is practically useless and no effort is made to show the dental students what the remedy is. The long pointed end can be used for no purpose. The other end is too large to be useful. To remedy the defect saw off the long end where it is three-quarters of an inch in diameter and round the edges with a rubber file. Then it can be used over the palatal surface and along the margins.—*L. P. Haskell, Chicago.*

Masticating Surface of an Inlay:—The inlay which is obliged to stand the stress of mastication, requires more care and attention after insertion than a gold filling; being of so hard a substance, it does not wear off, as do the natural teeth and gold, and must be tested from time to time with articulating paper, and polished to the normal contour, or there comes a time when they are doing more than their share in carrying the stress of mastication, and displacement or breakage is the result.—*W. M. Cooper, Frankfort-on-Main, Germany.*

Substitute for Iodoform:—If a dentist wants to use an agent that will have the same effect as iodoform, I would suggest that he employ europhen, which is a substitute for it, and from which you can get iodine which does the work. The only reason why iodoform is used is because when it comes in contact with the moisture in the tissue, it gives off iodine, and iodine is one of the best disinfectants we have; and if you want to use an iodine compound at all, instead of using iodoform, employ europhen, with which you can get the same results.—*J. P. Buckley, Chicago.*

A Pure Gold Crown:—I believe that the alloy in gold crowns is responsible for the trouble to root and gum, for girdle a tooth under the gum if you will with a gold filling and you see no such trouble as with the alloyed crown. Even a platinum band causes less trouble.

A twenty-four carat crown looks infinitely better, is conformed to the root more surely, the edge can be made finer and can be burnished closer to the root; and the crown with the cusp reinforced with twenty-two carat solder is strong enough, it being composed practically of the same materials as our gold inlays are now constructed.—*C. P. Plattenburg, Chicago.*

Treatment With Formalin and Cresol:—The mode of using this mixture should be governed largely by the condition of the contents of the pulp chamber and canals. If we have a putrefied condition a mixture containing more formalin can be used because of the fact that there are substances present to unite with the volatilized portion of the mixture. If the pulp chamber and canals do not contain putrescent material, we should use a weaker solution. Apical pericementitis can be formed as readily from a mechanical irritant as from bacteria or their by-products, and formalin being a powerful irritant the utmost care must be employed in sealing it in pulpless teeth.—*T. L. Grisamore, Chicago.*

To Practitioners Who Are Careless About Ethics:—Do not forget one thing, that the disparagement of your neighboring practitioner may do the patient more harm by the distrust that will be planted in his mind in regard to professional service generally than any good that can be done to him. Do not forget that things which seem to you grossly incompetent or negligent may not have seemed so at all to the man who did the work; it may not have been so under the circumstances in which the work had to be done. It is almost invariably possible to protect the interests of patients to the utmost extent, and, at the same time, to uphold the other man in the estimation of the patient. There is not one of us who is in danger of being too careful or too kind in respect to the good name and reputation of our fellow practitioners.—*Edmund Noyes, Chicago.*

Treatment of Chronic Abscess:—In the treatment of chronic abscess with a sinus the forcing of any medicine through the tract under pressure seems to me to be bad practice. If much of the peridental membrane about the end of the root has been destroyed, the medicine will not effect a cure; and if the peridental membrane is intact, such medication is unnecessary, as the case will heal as readily without it. Peroxide of hydrogen does much more harm than good in the treatment of these cases by forcing the infection deeper into the tissues as it expands. If the peridental membrane about the end of the root has been destroyed and that root has been bathed in pus for months, or if the end of the root has been roughened by absorption, the case will rarely if ever be cured while that root end remains. If the surrounding bone is carious, all of the softened bone should be removed to effect a cure. Occasionally a small piece of bone will have become necrotic and separated from the healthy bone, thus causing a continuation of the abscess. We should be on the lookout for such pieces and remove them.—*Arthur D. Black, Chicago.*

Procedure in Pyorrhea Treatment:—A careful examination should be made with a delicate instrument to determine the extent of the disease. Anesthetize the field of operation with a one-half of one per cent solution of cocaine released from a large-sized hypodermic syringe through a long blunt end, flexible needle, using rolls of cotton on each side of the alveolus to absorb the excess. With a carefully selected instrument remove the deposit with a pull stroke, if possible; if not with a push stroke. With the deposit positively removed, the pus sinus should be flooded with a warm solution of lactic acid containing a slight amount of oil of sandal wood. This fluid has two purposes to perform: The dissolving of small particles of concretion and a cauterization of the walls of the cavity. Lactic acid cauterizes just enough to induce granulation and oil of sandal wood is placed in the solution for its effect upon the mucous membrane and as an aid in the solution of the small particles of concretion. The tooth should be ligated to the adjacent teeth to obtain as much rest as possible, and that part of the work left alone for three or four weeks, I do not think it wise to polish with pumice until three or four weeks have elapsed. By that time union will have taken place and there will be no danger of the pumice working down into the pus cavity.—*T. A. Hardgrove, Fond Du Lac, Wis.*

MEMORANDA.

INSTITUTE OF DENTAL PEDAGOGICS.

The fifteenth annual meeting of the National Institute of Dental Pedagogics will convene in the St. Charles Hotel, New Orleans, La., December 31 and January 1 and 2, for which a good programme has been prepared by the executive committee. All teachers in dental colleges are respectfully requested to attend this meeting.

B. E. Lischer, Secretary and Treasurer.

A NEW EDITOR.

Dr. J. P. Buckley has accepted the editorship of the *Dental Digest*. We extend to Dr. Buckley a most cordial welcome to the editorial ranks with the hope that he will find the work very pleasant, and that the *Digest* will prosper under his management.

ALUMNI MEETING.

The annual meeting of the Alumni Association of the Chicago College of Dental Surgery will be held in the college building on Wednesday, January 15, 1908. A paper will be read by a prominent member of the profession, in addition to a long list of clinics. It is hoped that there will be a large attendance, especially of the graduates of the college.

Dr. T. L. Grisamore, President.

Dr. H. C. Peisch, Secretary.

AMERICAN DENTAL SOCIETY OF EUROPE.

The thirty-fifth annual meeting of the American Dental Society of Europe will be held in London, England, beginning July 31, 1908.

Notice is given thus early that American practitioners may include this meeting in their European itinerary.

Any information will be gladly given by writing the undersigned.

J. W. Gale, Honorable Secretary,
79 Hohenzollern-Ring, Cologne, Germany.

THE G. V. BLACK DENTAL CLUB CLINIC.

The G. V. Black Dental Club of St. Paul will hold its annual midwinter clinic in February, 1908. It is our intention to make this meeting the most interesting and profitable of all which we have held.

A cordial invitation is extended to the members of the profession to attend and assist us in making this meeting the best that has ever been held in the northwest. Dates and program will be published later.

For further information address R. B. Wilson, secretary, American National Bank building, St. Paul, Minn.

NOTICE.

The next meeting of the South Dakota state board of dental examiners will be held at Sioux Falls, S. D., Tuesday, January 14, 1908, beginning at 1:30 p. m. All persons desiring to take this examination must make application to the secretary, and send fee of $10.00 at least one week prior to the above date. No candidates will be received for examination who do not make application as above specified. Applicants are required to bring dental engine, filling materials, articulators, teeth, and all appliances necessary to do crown and bridge work.

G. W. COLLINS, Secretary,
Vermillion.

DR. GEO. W. COOK MARRIED.

The DENTAL REVIEW seldom publishes marriage notices, though many of them are kindly sent to it each year. They are always of interest to the editor, but he is not sure that they are of interest to the readers, and so they are omitted. But here is one that it will never do to ignore. When so important an event as the marriage of our distinguished colleague—who is editor of the *American Dental Journal*—is announced, we must pause in our mad career of professional activity, take off our hats, salute with our most profound bow, and smile our congratulations. Dental journalism has been dignified by this act, and the country is safer than it was despite the temporary tightness of money. Dr. Cook is said to wear a continuous smile now, while previously he wore one only about seven-eighths of the time. Long life, prosperity, and happiness.

RECENT PATENTS OF INTEREST TO DENTISTS.

867,017. Tooth powder receptacle, Herman L. De Mond, Philadelphia, Pa.
867,193. Dental soldering apparatus. Edward Flannigain, St. Louis, Mo.
867,062. Tooth brush. Orville C. Lillie, Conneaut, Ohio.
867,063. Rotary tooth brush. Orville C. Lillie, Conneaut, Ohio.
866,962. Swage for dental crown plates and similar articles. Carl. Rauhe, Dusseldorf, Germany.
866,963. Dental bur. Carl Rauhe, Dusseldorf, Germany.
866,753. Head rest. Henry E. Weber, Canton, Ohio.
867,264. Dental implement. Charles S. Evans, Dayton, Ohio.
868,628. Dental regulator and spacer. Eben M. Flagg, New York, N. Y.
868,109. Making artificial teeth. Joseph Morris, North Wales, Pa.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

DR. BRYAN HONORED.

The following communication sent by one of Dr. Bryan's confreres is gladly published by the DENTAL REVIEW. We also join in sending congratulations on his twenty-fifth anniversary:

"Dr. L. C. Bryan, of Basel, Switzerland, who has practiced successfully in that city since his marriage with Miss Atwood, of Boston, September 1, 1882, was, with his wife, the recipient of several silver tokens of friendship and appreciation; flowers and telegrams of congratulations were sent from admirers in various countries of Europe upon the occasion of their silver wedding day. Among others was a magnificent solid silver table decoration subscribed to by a number of dentist friends, engraved with the donors' names under a suitable dedication, which was presented at a gathering on the happy day, September 1.

"Dr. Bryan is an honorary member of the National Dental Association, the meeting of which he attended this summer, and he has been an honorary president or vice-president from Switzerland of most of the International Dental conventions and congresses for many years past."